



Charles E. Kellogg

ENGLISH JOURNAL

1948

Charles E. Kellogg

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The Commonwealth Bureau of Soil Science arranged a special conference on tropical and sub-tropical soils, at the suggestion and with the assistance of the Colonial Office and the Secretary of the Commonwealth Agricultural Bureaux. In addition to scientists in the United Kingdom, the British Colonies, and the British Commonwealth countries, a few foreign scientists were invited to take part under the hospitality of the British Government. I was invited to attend this conference scheduled to begin at the Rothamsted Experimental Station in Harpenden, June 14, 1948. It was decided in the Department of Agriculture that I should accept the invitation and accordingly the appropriate plans were made.

This Journal includes notes of observations, ideas, and suggestions as recorded on the spot. There may be errors, and some ideas may be altered considerably with more data and reflection. They are not for quotation without specific permission.

The Journal does not include the extensive reports presented at the conference since these are already mimeographed and will be printed in full by the Common-

wealth Bureau of Soil Science. No attempt is made to present a complete summary of the discussions of these papers since the relevant discussions will also appear in the final Proceedings of the Conference.

June 2, 1948

I leave Washington by train at 8:00 in the morning. Here I go again on another long trip across the Atlantic after a firm resolve less than a year ago never to do it again! But at least this is a beautiful day to begin.

I leave the train at the Liberty Street Station in New York about noon and go directly to the S/S America. I am assigned a small room on the "Sun" deck along with two other passengers. The boat is entirely booked and with all the visitors the crowd is enormous.

We are away from the dock at 4:10 p.m.

June 3, 4, 5, 6, and 7

I am at sea on the S/S America. At first, we have quite a bit of rough and foggy weather. In fact, the first morning the fog horn goes about "every minute on the half-minute". As soon as we are well out to sea I seem to fall into a state of semi-conscious relaxation. I do quite a bit of reading but not much else.

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June 8

We stop in Cobh for a few minutes in the early morning and then go on to Southhampton.

June 9

I am up early and find that the boat is already in port at 5:30. We have breakfast at 6:30 and are ready to leave. Just before getting off the boat, I have an interview with three representatives of the press from Southhampton. I am asked to comment upon Sir John Orr's recent statements regarding the problem of soil conservation, on the British Groundnuts Scheme, and the prospects for increased food supply in the world. If Sir John is correctly quoted, he has greatly overstated the erosion problem as compared to other soil problems and the potentialities for new production.

I am off the boat at 8:00 a.m. and have a little trouble with the customs people over some gifts that I have brought my friends in England. Although ladies are permitted to take in a few nylon stockings without duty, I learned, at a cost of two pounds, that gentlemen are not. The boat train leaves for London at 10:00.

For some distance the train passes through an area of rather poor soil. Some of it is quite sandy

and rather strongly podzolized. There are also areas of Rendzina and I see quite a bit of rather thin Brown Forest soil from cherty chalk -- or so it appears to me from the train.

The small grains are very green. I see some very good wheat and some fields of wheat and barley that are poor. Neither pastures or meadows are very good. Neither seem to have many legumes in the mixture.

About three-quarters of an hour out of Southampton most of the crops seem to be a little better, but the pastures are poor from want of fertilizers and from want of legumes in the mixture. Many of the grain fields are very streaked and irregular along the headrows, probably from uneven fertilizer applications.

About an hour and ten minutes out of Southampton one is impressed by the large number of hedges some of which are in bloom. I see several fields of potatoes but these are not good, not so good as the wheat. The land is picturesque but I am disappointed with the pastures. It looks very much like the old, old story of lime, phosphate, and legumes. One thinks this because there are a few good pastures. Some of the hay lands are poor from inadequate drainage. Most of the small kitchen gardens near the houses are nice. Along the

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railway are many gorgeous clumps, and even whole banks, of blooming rhododendrons. Just before the station of Fleet, we come into an area of rather poor, sandy soil much of which is imperfectly drained. A great deal of this is covered with a second growth of conifers and what looks to be aspen. After the sandy area we pass quite a bit of imperfectly drained land of uncertain texture. Some of this is now being drained. Beyond we pass uplands with quite a bit of chalk.

The boat train comes into the Waterloo Station in London about noon, and I go directly to the St. Pancras Station to get the train for Harpenden. I need to wait about an hour and a half for my train so I have luncheon in the station restaurant with two Englishmen at a table for three. I wonder where the English get their reputation for unfriendliness? I had a very nice luncheon with these gentlemen. One of them gave me some special stamps and a first cover from Jersey Island, and I gave him a few pipefuls of American tobacco.

My train leaves London a little after 2:00. At the station I had bought the Atlantic edition of Time. When I opened it I found a long review of my recent paper in the Scientific Monthly on Conflicting doctrines about soils.

I reach Harpenden a little after 3:00 and go to the Old Cock Inn where I am supposed to have a room; but I find there is some error and I am to stay in Dr. Walter Russell's home tonight and tomorrow night. I go over to the Rothamsted Experimental Station to meet Ogg, Muir, and others for a few minutes. I spend the evening with Dr. and Mrs. Russell.

June 10

Since my boat got in yesterday and the conference doesn't really open until Monday, the 14th, I shall have a little free time. Today I visit several people at Rothamsted, including Dr. Crowther, Mr. Jacks, Mr. Scofield, Dr. Muir, and Dr. Ogg and get caught up on what they have been doing since I was here a year ago. Fortunately, today I meet our Agricultural Attaché, Mr. Paul Nyhus. He agrees to arrange a hotel reservation for me for the last day in London, July 1 next.

June 11

In the morning I go to London in order to arrange my transportation back to the United States. I check in at the office of the United States Lines and buy my tickets for the boat train to Southampton July 2.

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I stop in Liberty's and buy some gifts for my family to be sent to the boat.

I am just seated in the compartment of the train back to Harpenden and who should walk in but Professor G. W. Robinson! I should like to have our statistical friends calculate the chances of that. He seems quite fit and full of enthusiasm for his prospective schedule, which includes a sea voyage to New Zealand next winter. We have a nice visit on the train.

Back in Harpenden, Dr. Russell takes me down to the Old Cock Inn where I am to remain during the rest of my visit. With great difficulty and all my powers of persuasion, I finally get the manager to send some laundry and a suit to be pressed. Such things are apparently major undertakings here. The normal time for laundry is two weeks and apparently it isn't normal to get a suit pressed at all. In the evening I go to the Ogg's for dinner along with Professor Robinson and Mr. Stephens from Australia. It is Robinson, I believe, who tells about a special set of initials used by some Indian students after their names -- F. B. A. This means Failed Bachelor of Arts. In other words, those that pass have a B. A. and those who failed have a F. B. A.!

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I listen to quite a bit of criticism of the present

situation in England. Undoubtedly, the Labour Government are making mistakes but I can't help but wonder what government would make fewer under the present situation.

To bed about 11:30.

June 12

The first thing I discover is that I cannot send any laundry yet. This is going to be a major problem. I should not have travelled quite so light on this trip.

Thorp came last night and he, Robinson, Stephens, Muir, and I have quite a discussion about soils in Muir's laboratory. This breaks off when Thorp has to go to the food office and get his coupons -- something I did on the tenth.

I spend most of the afternoon with Dr. Crowther and go to his place for supper.

Today I finish distributing the few little gifts I brought in my baggage: Candy for the Russell and Muir children, scatter pins for the Muir girls, and bacon, honey, butter and nylons for four of the ladies.

June 13

This Sunday begins cloudy and cold. I spend the morning reading and writing in the little upstairs sitting room of the Old Cock Inn.

After lunch, I go out to Muir's home and have "high tea" and sit with them in the garden.

Dr. Pendleton comes in late.

June 14

I am up early and out to Rothamsted for my mail. Members of the conference gather in the little public hall at the edge of the village at 10:00.

The Undersecretary of State for the Colonies opens the conference almost on time.

The conference is arranged so that we shall have short oral summaries by the authors of papers that have already been put in our hands in mimeographed form. These presentations are expected to take the mornings. Discussion periods are planned between about 5:00 and 7:00 in the afternoon. 1/

Mr. Stephens of Australia points out that some of the great soil groups in his country are found in both tropical and sub-tropical regions. He finds that many morphological features are common among soils of the temperate and tropical areas in Australia. There are also differences. He holds that some of these differences

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After lunch, I go out to Mr. A. home and have "high

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Commonwealth Agricultural Bureaux



Conference on Tropical and Sub-tropical Soils

Harpenden, June 14-19

Oxford, June 20-23

Lyndhurst, June 24-26

Programme

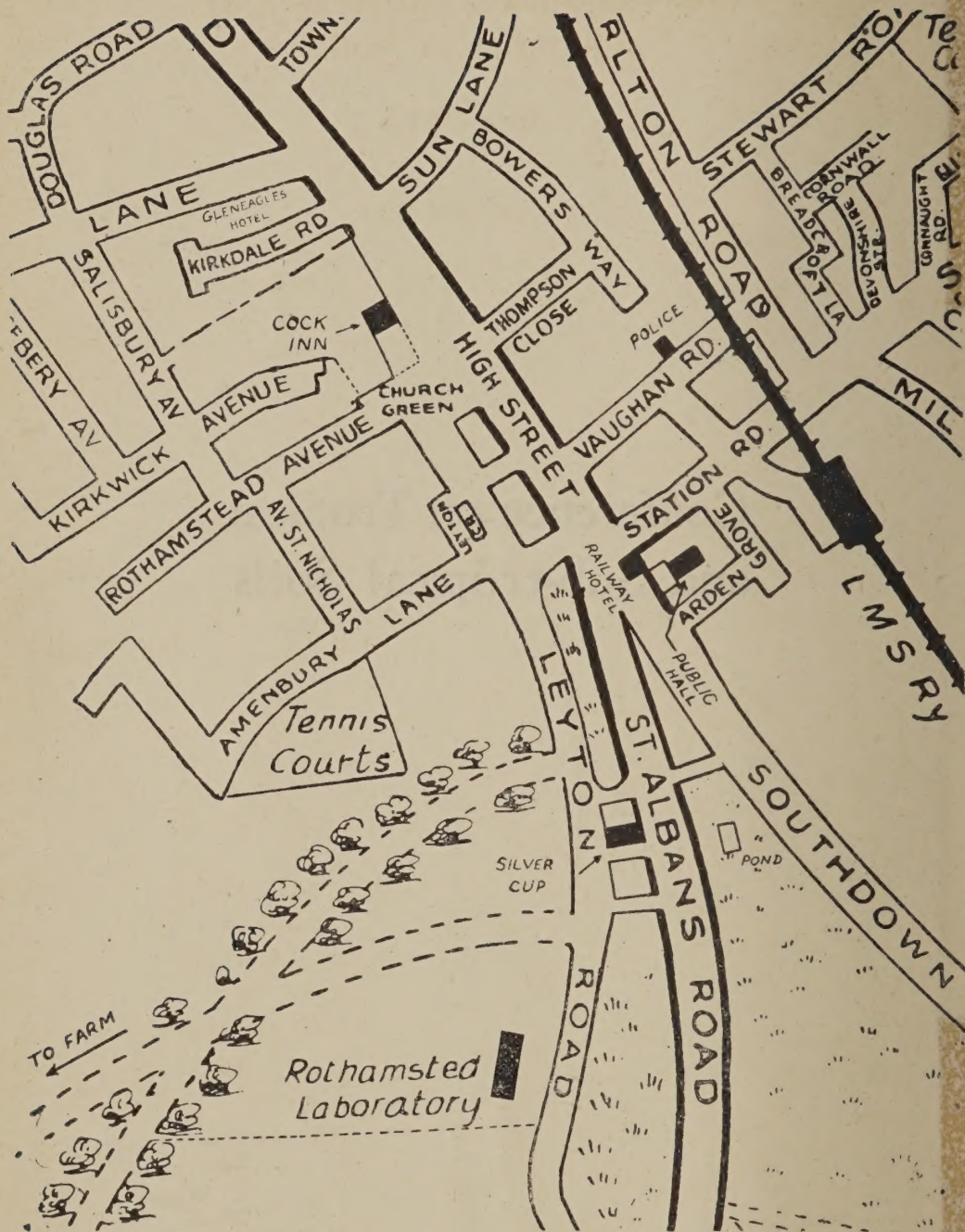
1948



Conference on Tropical and Sub-tropical Soils

Monday, June 1-1953
Tuesday, June 2-1953
Wednesday, June 3-1953

Conference on Tropical
and Sub-tropical Soils



PLAN OF CENTRE OF HARPENDEN

COMMONWEALTH AGRICULTURAL BUREAUX

CONFERENCE ON TROPICAL AND SUB-TROPICAL SOILS

June 1948

LIST OF MEMBERS

<i>Country or Organization</i>					<i>Name</i>
Australia					C. G. Stephens
Belgium					J. Baeyens J. Lebrun P. J. Livens
Cyprus					P. A. Loizides
East Africa High Commission ...					B. A. Keen
East African Agricultural and Forestry Research Organization					D. W. Duthie
France					G. Aubert A. Demolon S. Hénin C. Killian
Gold Coast					D. A. Bates C. F. Charter P. H. Nye
Holland					C. H. Edelman O. de Vries T. W. G. Dames J. M. Verhoog
Imperial College of Tropical Agriculture, Trinidad					F. Hardy H. J. Page G. Rodrigues
Jamaica					R. K. Richardson
Kenya					G. H. Gethin Jones C. Maher
Malaya					C. G. Akhurst T. A. Buckley
New Zealand					L. I. Grange K. S. Birrell
Nigeria					M. Greenwood H. Vine
Nyasaland					A. B. Cormack

Palestine	...	...	...	A. Reifenberg
Sierra Leone	...	...	...	H. W. Dougall
South Africa	...	...	...	C. R. van der Merwe J. P. van Zyl
Southern Rhodesia	...	...	...	A. D. Husband
Sudan	...	...	...	T. N. Jewitt
Tanganyika	...	...	...	R. W. R. Miller N. V. Rounce
Trinidad	...	...	...	E. M. Chenery
Uganda	...	...	...	G. ap Griffith E. Williams
United Kingdom	...	...	...	G. F. Clay (Colonial Office) E. M. Crowther W. B. Haines G. V. Jacks D. N. McArthur S. McConaghy C. G. T. Morison A. Muir W. G. Ogg G. W. Robinson Sir E. J. Russell A. B. Stewart H. H. Storey (Colonial Office) Sir H. A. Tempany
United States of America	...	...	...	J. A. Bonnet C. E. Kellogg R. L. Pendleton J. A. Thorp

GENERAL ARRANGEMENTS

The Conference will meet

(1) in the Small Public Hall (to the left of, and adjoining, the Large Public Hall behind the Railway Hotel) at 10 a.m. on Monday, and at 9.30 a.m. on Tuesday, Thursday and Friday ;

(2) in Red Gables (adjoining Rothamsted laboratories) at 5 p.m. on Monday, Tuesday, Thursday and Friday, and at 9.30 a.m. on Saturday.

Coffee will be obtainable at 11 a.m. in the Large Public Hall on each morning, except Saturday, that the Conference sits. Lunch will be obtainable on Monday, Tuesday, Thursday and Friday at 1 p.m. in Red Gables, price 3/-. Tea will be provided by the Rothamsted Experimental Station in Red Gables.

Members living in Harpenden may obtain lunch, if they prefer to do so, in their hotels. Other members wishing to lunch in hotels or eating houses in the town are advised to make early application for places.

TOUR OF THE FARM. If the weather is fine a tour of the Rothamsted farm will be made on Monday afternoon. Members will be taken round on tractor trailers which will leave from the front of the laboratories at 2 p.m., returning about 4 p.m. This tour will be postponed if the weather is unfavourable.

TOUR OF THE LABORATORIES. Parties will be conducted round the laboratories on Tuesday (or Monday, if Monday is wet), starting at 2.15 p.m.

Members of all departments of Rothamsted will welcome visits from, and informal discussions with, members of the Conference. Thursday and Friday afternoons, between 2 and 4 p.m., have been left free for this purpose and it is hoped that members will avail themselves freely of the facilities provided, and visit the farm or any laboratory or individual without constraint. Further conducted visits to the farm will also be arranged, if desired.

EXCURSION TO CAMBRIDGE AND THE FEN COUNTRY. The excursion will take place on Wednesday. For details see p. 10. Buses will leave from the Public Hall, Harpenden, at 10 a.m. sharp, returning about 7 p.m. Lunch and tea at the Dorothy Café, Cambridge.

EVENING RECEPTION. All members are cordially invited to an informal reception to be given by Rothamsted in Red Gables at 8.30 p.m. on Monday, June 14.

GARDEN PARTY. The Director of Rothamsted invites all members of the Conference to a garden party at his house from 3.30 to 6 p.m. on Saturday, June 19.

BUS SERVICE (321) TO AND FROM LUTON AND ST. ALBANS. Buses leave Park Square, Luton at 5, 15, 25, 35, 45 and 55 minutes past each hour, reaching the George Hotel, Harpenden 22 minutes later. Buses leave the north end of St. Peter's Street, St. Albans at 8, 18, 28, 38, 48 and 58 minutes past each hour, reaching the George Hotel 18 minutes later. Buses leave the George Hotel for Luton at 6, 16, etc., and for St. Albans at 7, 17, etc., minutes after each hour. After about 9 p.m. only a 20-minute service is run. Last 321 bus from Harpenden to Luton leaves

at 10.56 p.m., and to St. Albans at 10.27 p.m.

An hourly Green Line service (712) also operates between Luton, St. Albans and London. The last coach leaves Harpenden for Luton at 11.52 p.m., and for St. Albans at 12.32 a.m.

TRAIN SERVICE.

<i>Morning</i>			<i>Evening</i>						
Luton ...	9.11	9.37	6.11	6.55	7.47	8.45	—	10.40	—
HARPENDEN	9.25	9.48	6.21	7.6	7.59	8.55	10.0	10.50	—
St. Albans	9.40	9.58	6.32	7.18	8.10	9.6	10.11	11.0	—
St. Albans	8.42	9.32	6.19	6.33	7.29	8.8	8.39	10.31	11.24
HARPENDEN	8.51	9.42	6.30	6.44	7.40	8.19	8.50	10.42	11.34
Luton ...	—	9.52	6.41	6.53	7.50	8.30	9.1	10.54	11.43

DEPARTURE FOR OXFORD, SUNDAY, JUNE 20.

One bus will collect members from outside the George Hotel, Luton at 9.45 a.m., and will then proceed to St. Albans where it will collect all members living in St. Albans from outside the Red Lion Hotel at 10.30 a.m.

Another bus will collect all members living in Harpenden from outside the Old Cock Inn at 10.15 a.m. Both buses will proceed independently to Magdalen College, Oxford, arriving in time for lunch.

PROCEDURE AT MEETINGS.

Papers offered have been grouped into four subjects, one of which will be discussed on each of the four full days of the Conference, viz. :—

Monday : Review of tropical and sub-tropical soils

Tuesday : Soil classification

Thursday : Fertility problems

Friday : Soil erosion. Miscellaneous

The papers will be taken as read. Members will have received multigraphed copies of all papers offered. Further copies may be obtained from the Secretariat, but members are requested not to ask for these unless they are really required, as the supply is limited. Members will be allowed 5–10 minutes at the morning sessions in which to present the substance of their papers, after which the subject of the meeting will be open to general discussion. The afternoon sessions will be a continuation of the morning discussions. The papers to be presented at each session are shown in the day-to-day programme (pp. 9–12).

OPENING OF THE CONFERENCE.

The Conference will be formally opened at 10 a.m. on Monday by Mr. D. R. Rees-Williams, M.P., His Majesty's Under-Secretary of State for the Colonies.

APPOINTMENT OF COMMITTEES.

The appointment of two special committees will be proposed from the Chair at the first session. The purpose of these committees would be (1) to report on what measure of agreement exists on suitable methods of classification, and to make recommendations on future lines of study in the field of soil classification and survey ; and (2) to report on what steps should be taken to co-ordinate and promote work on the enhancement of soil fertility, with special reference to field experiments on manuring and cropping systems. The committees would report back

and formulate resolutions to be submitted to the Conference for adoption at the Saturday-morning session, or at a meeting to be arranged during the post-Conference Excursion.

DAY-TO-DAY PROGRAMME

Monday, June 14

10 a.m. Formal opening of the Conference by Mr. D. R. REES-WILLIAMS, M.P., Under Secretary of State for the Colonies. (In Small Public Hall.)

to be followed by **Review of Tropical and Sub-tropical Soils** (Chairman : W. G. OGG)

C. G. STEPHENS. A review of recent work on Australian tropical and sub-tropical soils (3)*

C. R. VAN DER MERWE. South African soil types (19-22)

G. AP GRIFFITH. Provisional account of the soils of Uganda (5)

H. VINE. Nigerian soils in relation to parent materials (7)

P. J. LIVENS. Characteristics of some soils of the Belgian Congo (29)

B. MAIGNIEN (presented by G. Aubert). Morphology and distribution of brown and chestnut soils in Senegal, Mauritania and Sudan (32)

S. HENIN. The present state of our knowledge of the soils of Madagascar (41)

C. G. TRAPNELL (presented by F. Hardy). Vegetation—soil map of Northern Rhodesia : explanatory memoir (40)

W. E. CALTON. A reconnaissance of the soils of Zanzibar Protectorate (14)

W. J. BLACKIE. Soils of Fiji (8)

2.00 p.m. Visit to farm (if fine). Departure from outside Rothamsted laboratory

4.30 p.m. Tea

5.00 p.m. Conference session in Red Gables (Chairman : L. I. GRANGE)

8.30 p.m. Reception in Red Gables

Tuesday, June 15

9.30 a.m. **Soil Classification.** (Chairman : C. R. VAN DER MERWE)

F. HARDY. Soil classification in the Caribbean region (1)

C. E. KELLOGG. Classification and nomenclature of tropical soils (13)

G. H. GETHIN JONES. Colonial soil types. Systematic soil classification and nomenclature (11)

* Numbers in brackets indicate the serial number of the paper, to be found at the top right-hand corner of the first page of each paper.

R. L. PENDLETON. Classification and mapping of tropical soils (12)

A. REIFENBERG. Mediterranean red soils in soil-classification schemes (16)

J. BAEYENS. The bases of classification of tropical soils in relation to their agricultural value (24)

J. A. BONNET. Broad classification of tropical soils in Puerto Rico by various practical systems (4)

G. AUBERT and B. NEWSKY. Observations on the vernacular names of the soils of the Sudan and Senegal (33)

The late G. MILNE (presented by G. W. Robinson). Memorandum on soil surveying in East Africa (17)

T. W. G. DAMES. Some notes on the soil survey of Java (36)

N. V. ROUNCE. Soil classification and survey in relation to land rehabilitation and expansion in Usukuma (27)

2.15 p.m. Conducted tour of the Rothamsted laboratories. Members are requested to assemble in the hall of the main building

4.00 p.m. Tea

5.00 p.m. Conference session (Chairman : C. G. STEPHENS)

Wednesday, June 16

10.00 a.m. EXCURSION TO THE CAMBRIDGESHIRE FENS. The route will pass through Luton, Hitchin, skirting Letchworth Garden City, Royston and Baldock.

11.30 a.m. (approx). Arrive at School of Agriculture, Cambridge. Demonstration by H. H. Nicholson and E. C. Childs

12.30 p.m. Lunch

2.00 p.m. Excursion to the Fens. The party will travel north on the Ely road via Milton and Waterbeach through a region of urban and ribbon development on Valley Gravel overlying Gault Clay. At Chittering, some 8-9 miles out, the road crosses the exposure of Lower Greensand, with sandy light loams, here carrying fruit plantations.

Shortly the road crosses the Old West River, formerly the main course of the Ouse, prior to the cutting of the Bedford Rivers (Earith to Denver) in the 17th century. The embanking of the river and its tributary streams and the recent elevation of them subsequent to the 1947 floods are here visible.

The road continues north over some two miles of poor alluvial and skirt land on Kimeridge Clay until it reaches the higher ground of the original Ely island. Here we turn east at Stretham to encounter Fenland proper with its black peaty soils and to recross the Old West River. At this point the river channel, its flood banks and the accompanying washlands can be seen, with a steam drainage pump house nearby. Nowadays the Old West River is a tributary of the Cam which the road crosses beyond the railway.

Here again, floodbanks are in evidence, though on the east side the island of Upware functions as such. This Corallian exposure constitutes another Fen island, of unique character for this part of England. The route traverses its length to Upware, with the preserved Wicken Fen a field or two away on the left of the road. Here at the confluence of the Cam, and its tributaries the Burwell and Reach Lodes, the main features of Fenland and its drainage can be seen at one point, i.e., the main river, its washes and floodbanks, with the O.D. marks showing relative levels; the Lodes—rationalized and embanked streams of upland water, with little margin for floods, emptying into the main river by gravity *via* a lock (two-way), but occasionally having to be pumped into the main river during high floods; the Commissioners' or interval drainage system running at existing land levels, under the Lodes, to the main pump by the side of the main river.

The route then lies through Swaffham Fen, on concrete roads laid down as part of war-time reclamations, to the high chalk land outside the Fen and thence to Cambridge, via Swaffham Prior and Swaffham Bulbeck. The thin dry chalk lands of the Middle Chalk are the high open areas to the left of the route, which itself traverses a lower more fertile area of fuller bodied, moister soils just outside the Fen country.

- 4.30 p.m. Return to Cambridge
- 5.30 p.m. Leave Cambridge
- 7.00 p.m. Arrive at Harpenden

Thursday, June 17

- 9.30 a.m. **Fertility Problems.** (Chairman : G. W. ROBINSON)
 E. M. CROWTHER and A. B. STEWART. Memoranda on colonial fertilizer experiments (30)
 E. M. CROWTHER. Field experiments and soil fertility problems (37)
 F. YATES. The design of rotation experiments (38)
 C. R. VAN DER MERWE. Maintenance of the fertility of the laterites, lateritic red and lateritic yellow earths (23)
 O. DE VRIES. Remarks on some aspects of the soil-fertility problem in the tropics (9)
 C. H. EDELMAN. Conservation of soil fertility in the Netherlands Indies (39)
 G. AP GRIFFITH. Fertility problems in Uganda (6)
 T. N. JEWITT. Soil-fertility studies in the Zande District (26)
 K. A. DAVIES. The phosphate deposits of Eastern Uganda (18)
- 4.00 p.m. Tea
- 5.00 p.m. Conference session (Chairman : M. GREENWOOD)

Friday, June 18

- 9.30 a.m. **Soil Erosion. Miscellaneous Problems.** (Chairman : H. J. PAGE)
H. A. TEMPANY. Soil conservation in the colonial empire (31)
C. KILLIAN. Degradation and protection of the soils in the pastures of the Algerian steppes (28)
C. MAHER. Some observations on soil conservation in Kenya (35)
J. BAEYENS. Classifying banana soils in tropical West Africa (25)
P. A. LOIZIDES. The cereal-fallow rotation in Cyprus (10)
W. B. HAINES. Cultivation and manuring of rubber trees (15)
F. HARDY and G. RODRIGUES. Methods of routine soil examination used at the I.C.T.A. (2)
H. BIRCH. The estimation of adsorbed and acid-soluble phosphates in East African soils (34)
- 4.00 p.m. Tea
- 5.00 p.m. Conference session (Chairman : D. W. DUTHIE)
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Saturday, June 19

- 9.30 a.m. **Closing Session.** The agenda will be issued during the preceding days (Chairman : B. A. KEEN)
- 3.30 p.m. Garden party by invitation of Dr. and Mrs. W. G. Ogg, at 1, West Common
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Sunday, June 20

- 9.45 a.m. Bus collects members from the George Hotel, Luton
- 10.15 a.m. Bus collects members from the Old Cock Inn, Harpenden
- 10.30 a.m. Bus collects members from the Red Lion Hotel, St. Albans
- 12.30 p.m. (approx.) Arrive at Magdalen College, Oxford
- 1.00 p.m. Lunch
- 2.30 p.m. Visit to the Soil Science Museum, Department of Agriculture, Parks Road

Monday, June 21

Visit to Wroxton Ironstone Quarries, Edge Hill, Wigginton Heath and Wychwood Forest

Route : Oxford—Deddington—Banbury—Wroxton—Edge Hill—Shenlow Hill—Wigginton—Great Tew—Charlbury—Leaffield—Finstock—Bladon—Oxford.

Leave Oxford at 10 a.m. by the Banbury Road. Near Kidlington (5 miles out) a profile on Oxford Clay will be seen. The Oxford Clay covers a wide area which before the war was mainly in grass. Much of it was ploughed up during the war. It makes strong wheat land, and under proper management will yield $1\frac{1}{2}$ —2 tons of grain per acre (4—5 tons per hectare). The main problem is drainage.

Beyond Adderbury a field will be seen on the Middle Lias, in which, in 1946, an oat yield of $3\frac{1}{2}$ tons per acre (9 tons per hectare) was obtained. This is a deep and exceptionally productive example of a scil which is mostly under arable cultivation. Profiles will be inspected at Wroxton. The shallower soils fix phosphates strongly, and the fertilizer has to be drilled with the seed. Phosphate fixation appears to be less on the deeper soils.

At Wroxton, the Oxfordshire Ironstone Company works extensive ironstone deposits in the Middle Lias. The Company preserves the surface soil and replaces it after the ironstone has been removed. The productivity of land thus reclaimed is very high.

Comparison should be made between the results of this method of ironstone working and the older "pick-and-shovel" method, which can be seen at Ratley, Edge Hill. At Edge Hill there is a good view over the escarpment to the Keuper Marl country to the north-west. The battle of Edgehill, which started the Civil War in 1642, was fought in the plain.

From Edge Hill the route runs southwards and turns left towards Swalcliffe. By Shenlow Hill a change in topography from the flat land of the Middle Lias to hilly land and a corresponding change in the vegetation are associated with a fault running south-west.

On Wigginton Heath a highly podzolized soil on Northampton Sand, and a cultivated variant of the same will be seen. After passing through Charlbury, Wychwood Forest is skirted, and a cutting in the Forest Marble will be seen.

The village of Finstock, which was one of the casualties of the pre-war agricultural depression and fell into a state of complete dereliction, is now showing signs of recovery.

Tuesday, June 22

Tour of the Vale of Evesham

Route : Oxford—Woodstock—Chipping Norton—Moreton-in-Marsh—Broadway—Wellersey—Honeybourne—North Littleton—Evesham—Fladbury—Persore—Beckford—Winchcombe—Hawling—Bourton-on-the-Water—Burford—Witney—Oxford.

Leave Magdalen College at 9 a.m., sharp.

After leaving Oxford, the road to Chipping Norton passes over a

wide valley in the Oxford Clay, through Woodstock, at the approach to which a glimpse of Blenheim Palace on the left may be obtained.

Soon after this the land rises with the dip-slope of the Oolitic Limestones to Chipping Norton with its old Market Hall and buildings of Jurassic Limestone. Passing through Moreton-in-Marsh, the route continues to Broadway Hill over an expanse of typical "Cotswold country" with its gentle undulations and shelter-belts of trees. On Broadway Hill, in quarries in the Inferior Oolite, two soils can be seen: one, the Sherborne Series—a thin, brown soil covering much of the Cotswold Hills; the other, less widely distributed, is a thin, black soil resembling a rendzina.

A magnificent view over the Vale of Evesham to the Malvern Hills should be obtainable from the summit and on the way down Broadway Hill, and the intensive cultivation of the Vale can be appreciated. The land falls away sharply and the scarp slope consists of a thin band of Upper Lias Clay on a wider band of Middle Lias Sands and Sandstones. The flat wide Vale is floored with Lower Lias Clay and Limestone, the latter producing the low "banks." Bredon Hill is conspicuous and is an outlier of these same formations, but the south side has been let down by an east-west fault.

Proceeding through the famous beauty spot of Broadway, the route skirts the scarp slope to Tump Bew Hill. The flat character of the clay vale with its brown (sludge) and grey (solid) soils can be appreciated, and at Tump Bew Hill a claypit shows the grey soil of the Evesham Series derived from the dark blue-grey clay. This is one of the most extensive soils in the Vale, and its calcareous nature enables a good structure to be obtained on the surface and permits the cultivation of market-garden crops as well as tree fruits. While it is possible to grow apples on this soil, plum trees are more suitable, and the Pershore Yellow Egg and Victoria are the most commonly grown varieties.

The next stop is at North Littleton on one of the clay "banks." In the foreground, Offenham village is situated on the lowest river terrace of re-worked Triassic sand and gravel. Beyond this river, the land rises to a second terrace of similar material separated from the river by a narrow slope of Lower Lias Clay. In the middle distance a low clay "bank" is capped with a higher terrace and the background is occupied by a ridge of Keuper Marl also capped by resorted glacial deposits. While the sandy terraces are largely devoted to market-garden crops, the clay slopes are mainly under fruit.

The route now goes through some of the market-garden land to Evesham and thence along the foot of a steep slope of red Keuper Marl (Worcester Series) above which lies the grey Lower Lias Clay. The wide alluvial stretch adjoining the river can be seen, as well as the sudden rise to the flat river terrace on the opposite side.

At Fladbury a stop is made to see soils of the Pershore Series on a river terrace. It will be observed that the water table is not far below the surface and thus provides adequate moisture during the summer. When the sand and gravel are very thick, droughty conditions may occur, and where they are thin, the underlying clay, approaching the surface, may cause the soil to be less well drained. The sections show the

"piping" associated with this series. The surface layers are probably the result of "sludging" processes.

From Pershore the route circles Bredon Hill, and the steeply sloping north face and the more gentle slope of the southern can be clearly seen. At Beckford a stop is made to see the Cheltenham Sand which, here, is overlain by a thin sludge deposit giving rise to the Badsey Series. This, and similar deposits, help to lighten the texture of the Lower Lias Clay and make it suitable for the cultivation of asparagus, most of the English supply being produced in this Vale.

Passing between the Jurassic outliers of Alderton and Oxenton Hills, the route goes through Winchcombe, and over the Cotswold scarp. On Sudeley Hill a stop is made to inspect a soil which bears some resemblance to a *terra rossa*. It is developed on the Inferior Oolite, a porous, cream-coloured limestone, and the soil has a decidedly redder colour than is usual on this formation.

After this the Inferior Oolite is traversed to Bourton-on-the-Water. The route then passes through Bûrford, a charming village on the river Windrush and follows its valley to Witney, famous for its blankets, and finally crosses the Oxford Clay to Oxford. Gravel-pits in the Badsey Series can be seen on the right-hand side as Oxford is approached.

Wednesday, June 23

Visit to Bagley Wood and Kennington Nursery

Leave Magdalen College at 9.30 a.m.

Bagley Wood, a small woodland area on Boars Hill, is described in Domesday Book as being under forest and, as far as is known, has been forest ever since. Sir W. Schlich in 1904-8 laid down $\frac{1}{4}$ -acre variety-trial plots with different tree species, mostly conifers. These plots have now developed distinct profiles varying with the tree species, and some of these profiles will be seen.

From Bagley Wood the party will go on foot to Kennington nursery at the foot of Boars Hill. The purpose of the visit is to inspect experiments carried out under the direction of Dr. E. M. Crowther for a Committee on Nutrition Problems in Forest Nurseries set up by the Forestry Commission in 1944. The Committee has also initiated experiments, which will be seen on June 25, on a very different type of soil at Wareham, Dorsetshire. Most of the Committee's experimental work in England and Wales has been carried out by the Chemistry Department of Rothamsted Experimental Station in collaboration with the Research Branch of the Forestry Commission.

The soil of the Kennington nurseries is derived from Lower Calcareous Grit (Lower Corallian) over Oxford Clay. The soil in the Old Nursery is neutral or slightly calcareous. It is fertile as judged by the general growth of most trees and garden plants, but Sitka-spruce seedlings grow poorly in the first season, especially on the more basic parts of the nursery. Some improvements have been obtained by acidifying the soil, adding formalin or using ammonium sulphate and ammonium phosphate. The precise-cause of the failure has not yet been established, and practicable methods for growing good first-year Sitka seedlings or for quickly acidifying

ifying the soil have still to be found. The preliminary results and observations in other established nurseries suggest that the utmost care should be taken to avoid adding basic materials to such nurseries.

The Kennington Extension nursery was taken over in 1944 from old grassland ploughed up during the war. The soil is moderately acid. First-year Sitka-spruce and Scots-pine seedlings have responded well to N and P fertilizers. Superphosphate has proved far superior to basic slag. Even in the drought of 1947 big seedlings were grown on watered plots receiving only inorganic fertilizers.

A wide range of pH values was established in plots treated early in 1948 with either aluminium sulphate or calcium carbonate in order to test the effects of soil reaction on several species of trees and agricultural crops. Observation tests are being made on a number of possible rotation crops for forest nurseries. The residual effects of some of these crops are being tested on conifer seedlings.

Two other nurseries in forest clearings near Oxford show large responses to phosphate fertilizers, especially superphosphate. One of these nurseries showed a catastrophic failure of conifers and yellow lupins on an isolated patch of calcareous soil.

The buses will return from Kennington to Magdalen College not later than 12.45 p.m. 1.30 p.m. Lunch in Magdalen College by invitation of H. M. Government.

Thursday, June 24

Journey from Oxford to Lyndhurst

Route : Oxford—Frilford—Wantage Road Station—West Lockinge—Hungerford—Marlborough—Burbage—Amesbury (Stonehenge)—Salisbury—Landford—Lyndhurst.

Leave Magdalen College at 9 a.m. sharp. Leaving Oxford by the west, the road turns south-west on Cumnor Hill.

The first stop is made in Tubney Wood where a quarry face in Frilford Sand will be seen. This is formed from a yellow calcareous sharp sand, mapped mainly as "Calcareous Grit" by the Geological Survey. The topography is usually flat, but may be very gently sloping. The parent material is deeply weathered and, as the drainage is excessive, it undergoes considerable leaching. The soil consists of 80% to 90% of sand, coarse sand usually predominating. It is usually acid, but the pH value is higher than might be expected for a soil liable to rigorous leaching. The soils are characterized by the presence of a heavier textured B horizon, at a depth of about $1\frac{1}{2}$ to 2 feet. This may contain as much as three times more clay than the overlying horizon, and shows columnar structure. It is a deep chocolate-red in colour and usually only a few inches in depth. It shows up well in sections as an irregular band of brighter coloured material, resting on coarse yellow sand or sandstone doggers.

The route continues through low-lying land towards Wantage. Before Wantage a stop is made at Grove Park to see the Grove Series. This soil is formed from a deposit of clay, sand and gravel, which settled out from a glacial lake. As the coarser material settled first, the deposit

consists of a sandy clay layer, overlying gravel. Both these layers are of variable thickness. Below the gravel lies Gault or Kimeridge clay, which formed the old floor of the lake. The deposit consists of eroded material from the Chalk and Upper Greensand outcrops, mixed with Gault and Kimeridge clay.

After passing through Grove Park, on the Lockinge Estate of about 10,000 acres comprising numerous farms whose economics interlock so as to form an integrated unit, a stop is made to see the Ardington Series, a sedentary soil formed from the Green Sand strata of the Upper Greensand formation. It is a dark greenish-grey stiff sandy medium loam. It contains a high percentage of glauconite, which gives it a greasy feel. The profile becomes more compact, greener, and more glauconitic with depth, until it becomes dark bottle-green in colour. The change is so gradual that the different horizons shade imperceptibly into one another, indicating a slow rate of weathering. The soil is very compact and becomes more so with depth.

Passing through West Lockinge the road rises onto the Chalk of the Berkshire Downs. The Icknield Series will be seen in a chalk pit. This soil is formed under old pasture. The longer it has remained undisturbed the more developed are its characteristics. It is a dark brown organic loam, shallow, friable and flinty. Under old pasture it is no more than a skin of turf overlying flints and rubbly chalk rock. It occurs where the topography is elevated and rolling, as on the ridge of the Upper Chalk and, to a certain extent, on the Middle Chalk. It is found in the most exposed and elevated positions and on very steep slopes, where cultivation is impossible or unprofitable.

A variant of this is the Upton Series of which a good deal can be seen from the road. It is a buff-coloured rubbly loam, and is formed on the Upper and Middle Chalk where the topography is of a rolling nature. It is developed under arable cultivation and, as it is fairly shallow, is much mixed with fragments of chalk rock.

The typically rolling chalk country continues for several miles. Patches of clay-with-flints soils can be distinguished by their tree vegetation. After Hungerford, the route turns westward, and clay-with-flints areas become more frequent, the most prominent being Savernake Forest in which the town of Marlborough is situated. A clay-with-flints soil profile (Winchester Series) under forest will be seen, showing some evidence of podzolization, and may correspond to the American Grey Brown Podzolic soils. The top (A) horizon is usually greyish in colour, and with a slightly platy structure. The change to the B horizon is fairly sharp, both texturally and in colour, the texture becoming heavy loam to clay loam and the colour more red-brown. Manganese-dioxide spotting becomes more frequent. Locally, yellowish patches may occur. The deeper layers are usually somewhat lighter in texture.

From Marlborough the road runs through Burbage and the Collingbournes to Amesbury. Strip lynchets, a relic of the Celtic system of agriculture that prevailed from about 450 B.C. to 450 A.D., can be seen on the left just before Collingbourne Kingston is reached. The road shortly afterwards rises onto the chalk land of Salisbury Plain, and several tumuli and prehistoric barrows can be seen.

At Amesbury, a diversion will be made to visit Stonehenge.

More strip lynchets can be seen just outside Amesbury, on the road to Salisbury, and a little further on the outline of the old dykes of Celtic fields. A stop will be made for tea at Old Sarum, a great prehistoric fortress which was an important site in the period preceding the arrival of the Romans. About 1075 Old Sarum became the seat of a bishopric, and a cathedral was built in the form of a cross. Subsequently friction developed between the garrison of the fortress and the priests of the cathedral, and in 1220 the cathedral was moved to New Sarum (Salisbury), two miles to the south. The castle at Old Sarum gradually fell into decay, and was abandoned about 1450. But for nearly four centuries afterwards, though uninhabited, it continued to send two members to the House of Commons. William Pitt was for 13 years a member of this most famous of the "rotten boroughs."

Salisbury cathedral, a beautiful example of Early English architecture, was built between 1220 and 1266. The spire, the tallest in England, is 404 feet high.

Shortly after Salisbury the New Forest is reached, a region of poor Tertiary deposits, much of which has never been cultivated.

Friday, June 25

Visit to Decoy Heath Forest and the Forestry Commission's research nursery at Sugar Hill, Wareham, and to pasture-reclamation work carried out at Marley Mount by the Hants. Agricultural Executive Committee.

One bus will pick up members from the Grand Hotel, another from the Crown Hotel, at 9 a.m. Both buses will then proceed to Northerwood House.

The route to Wareham goes by Ringwood and Wimborne Minster, and passes through woodland and heath interspersed with pleasant residential areas. No stop will be made before Decoy Heath Forest on Wareham Heath. Here planting-out experiments are being made by Dr. Crowther with transplants which received different manurial treatment in the nursery. The plantings were made under severe conditions, recognized as unfavourable for Sitka spruce. Plants with adequate manurial treatment in the nursery show every sign of growing vigorously. Direct manurial tests in the forest in 1947 showed a first-year effect of nitrogen on diameter, needle colour and bud size.

Planting experiments under more normal conditions were made at two forests in 1947 and at four in 1948.

The party will then continue to Sugar Hill nursery, in another part of Wareham Heath, where fertilizer experiments with conifer seedlings are being carried out. Wareham Heath has podzolized soils derived from Bagshot Sands (Eocene). There is often a pan which leads to water-logging in winter. The soils are very acid and very deficient in plant nutrients.

Dr. M. C. Rayner has shown repeatedly since 1933 that good conifers can be grown on this kind of soil if it is treated with certain composts. She has concluded that the effects of compost must be ascribed to the reversal of some soil condition inhibiting mycorrhiza formation and not

“ to the *direct* action on the trees of any manurial constituent added.”

Rothamsted experiments since 1945 have shown that big seedlings can be grown in Wareham soil provided adequate amounts of N, P and K are supplied either as fertilizers or composts. The plants raised with fertilizers have done well as transplants in several nurseries and in direct plantings as either 1-year-old or 2-year-old plants in several forests. Responses to potassium were particularly striking in the wet season of 1946. The extreme poverty of this kind of land leads to the interesting position that any two of the three elements N, P, K may give relatively poor results if used without the third. The effects of individual fertilizers used in factorial combinations with composts are closely related to the chemical compositions of the composts.

Many experiments are in progress on methods for using fertilizers and for correlating the effects of nursery treatments on seedlings and transplants with the ultimate performance of the trees in the forest.

As many new heathland nurseries are now being opened up, attempts are being made to discover suitable rotation crops for the very acid soil conditions which must be maintained.

After lunch at Wareham the return will be by much the same route as far as Ringwood, then through Burley to Marley Mount where the reclamation of some 650 acres of waste land by reseedling will be demonstrated by Mr. D. R. Browning of the Hampshire A.E.C.

The party will have tea at Northerwood House and will afterwards continue by bus to Bolderwood Enclosure where an interesting example of natural regeneration of Douglas Fir in a pit made during the war by a bomb will be seen.

Saturday, June 26

The Forestry Commission has kindly offered to provide lorries to convey members to Brockenhurst, whence trains can be obtained to London. The following are the morning trains :—

Brockenhurst	9.28	10.56
London (Waterloo)	12.07	12.59

Wm. W. Brinters
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Mr. J. Thorp,
204, Nebraska Hall,
University of Nebraska,
Lincoln 8,
Nebraska, U.S.A.

may be below the level of the category great soil group. He emphasizes that different expressions of the same great soil groups can be expected among the several continents. He points out that the Podzols and Desert soils of Australia are generally significantly different from the Podzols and Desert soils of North America.

He also emphasizes that even among soils of similar morphology, the genetic processes may be quite different.

His paper is in a sense a summary of data collected over a period by Prescottt and others.

C. R. van der Merwe presents a paper on his concept of the soil groups in the Union of South Africa.

Mr. G. ap Griffith presents his paper on the soils of Uganda. He says that a great deal of the area consists of a repeated complicated soil pattern that resembles wallpaper of the Victorian Period. He emphasizes the importance of soil rejuvenation by uplift and consequent dissection. Thus, he says, the most fertile soils are in the southern part of the country. The greater the rainfall and the higher the temperature the more mature and the less fertile the soils. He says they are especially low in calcium and other bases except potassium. But the fertile soils in the south are relatively high in bases and available phosphates. In

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places there has probably been some rejuvenation through volcanic ejecta.

H. Vine discusses the soils of Nigeria. I am pleased to hear him stress the great importance of geomorphological research as a basis for an understanding of soil genesis in the tropics. The need was strongly impressed on me last summer in the Congo. He points out that there are many soils of good quality in Nigeria because the tree roots reach the decomposing primary rocks and are thus able to pull mineral nutrients to the surface. In fact, some of the soils have a rather high pH -- nearly neutral -- in the surface, with decreasing pH beneath. But under high rainfall they also have soils that are very acid on the surface. He mentions some strongly illuviated mottled lateritic soils with gray gravelly layers beneath.

(As Vine finishes, it rains the hardest I have ever seen it rain in England.)

Georges Aubert reviews the soil geography of West Africa and shows us maps that I hope he brings to the United States with him this summer.

S. Henin gives a discussion of the soils of Madagascar.

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paper and van der Merwe gives a summary of the soils associated with the vegetative types of Northern Rhodesia.

Since Calton and Blackie are not present their papers are not presented orally.

Dr. L. I. Grange of New Zealand presents a brief paper on Soils of some of the Pacific Islands. In this he discusses some soils that he calls Rendzina, incorrectly, I am afraid.

Immediately after lunch, I have a long talk with Dr. C. H. Edelman about organization and plans for the Fourth International Congress of Soil Science to be held in Amsterdam, July 24 to August 1, 1950. I am pleased to see that the Dutch committee have the plans in such an advanced stage. Together, we go over a tentative list of scientists for temporary officers and principle speakers of the various sections.

About 4:00 we have the usual English tea in Green Gables at Rothamsted.

We assemble for the discussion session at 5:00. It begins with a great deal of talk on the old chestnut: What is laterite? Again there are too many who want to settle definitely for: (1) iron moved up, (2) iron moved down, or (3) iron segregation. It seems obvious to me that we could have all three important in the genesis even

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FOURTH
INTERNATIONAL CONGRESS
OF SOIL SCIENCE

★

AMSTERDAM, NETHERLANDS

July 24 — August 1, 1950 (with post congress excursion)

★

FIRST CIRCULAR (May 1948)

★

Honorary President

Dr D. J. Hissink

President

Prof. Dr Ir C. H. Edelman

Organizing Committee

Prof. Dr Ir C. H. Edelman (*Chairman*) Ir W. R. Domingo

Drs P. Bruin (*Vice Chairman*) Dr A. C. Schuffelen

Ir T. K. Huizinga (*Treasurer*) Dr Ir A. J. Zuur

Prof. Dr J. P. Bakker Dr P. A. Rowaan (*Secretary*)

Prof. Dr F. A. van Baren

Mailing address:

Secretary of the Organizing Committee
of the Fourth International Congress of Soil Science,
3 Prof. van Hallstraat,
Groningen, Netherlands.

FOURTH INTERNATIONAL CONGRESS OF SOIL SCIENCE.

Introduction

After world war II at several conferences of soil scientists the desirability of holding an international soil science congress has been put forward again and again. The chief aims of such a congress should be the renewal of the relations between the soil scientists of the different countries, the exchange of scientific progress made during recent years and the adoption of new rules for a reconstructed International Society or Union of Soil Science.

An international committee, which met in Paris on May 22, 1947, decided that an International Soil Science Congress should be held. At this meeting the Dutch Government invited the congress to the Netherlands in 1950, which invitation was accepted. The organization of the congress with all necessary decisions and responsibilities will be the task of a Dutch committee (the resolutions of the Paris meeting will be published in „Soil Science” and other periodicals).

It was further decided in Paris, that a Temporary Advisory Committee shall be constituted by representatives of the soil scientists of fourteen nations; Prof. Dr D. G. Vilensky (Moscow) has been invited to be chairman, Dr A. Muir (Harpenden) to be secretary. This committee will have to prepare the necessary proposals and agenda for discussion and action in 1950 in view of the reconstruction of the International Society or Union of Soil Science, and to give any required suggestions and advice to the Dutch organizing committee.

The Netherlands Society of Soil Science has appointed a committee to organize the congress, which after the congresses in Washington 1927, in Leningrad and Moscow 1930 and in Oxford 1935 will be the Fourth International Congress of Soil Science.

Programme

The place of meeting of the congress will be Amsterdam and the provisional dates are July 24 — August 1, 1950, with a post

congress excursion of about ten days through those parts of the Netherlands which are the most interesting from a soil scientific point of view, and probably also through some parts of Belgium. Full particulars of this excursion will be given later.

In plenary sessions a limited number of more general papers will be read by prominent soil scientists.

Stamp
required

Secretary of the Organizing Committee
of the Fourth International Congress of Soil Science

3 Prof. van Hallstraat

GRONINGEN
NETHERLANDS

The congress fee has preliminarily been fixed at 3 pounds sterling and 15 shillings or 15 U.S. dollars, and will entitle members to attend all the sessions and excursions *during* the congress and to

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No.

(please do not fill in)

FOURTH INTERNATIONAL CONGRESS OF SOIL SCIENCE,
AMSTERDAM 1950.

Form of preliminary application for membership.

Note: Each prospective member is requested to fill in this form and to send it immediately to the Secretary of the Organizing Committee, 3 Prof. van Hallstraat, Groningen, Netherlands.

I propose to attend the fourth International Congress of Soil Science, Amsterdam 1950.

I shall be accompanied by relative(s).
(number)

I wish *a.* hotel accomodation at Amsterdam.

b. accomodation as a guest of a private family at Amsterdam.
(please strike out which you do not want)

Name and Title (blockletters).

Full Address

Form received on
Contribution received on
Card forwarded on
Proceedings forwarded on

(please do not fill in)

..... (blockletters).

Date Signature

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A provisional list of the main subjects to be dealt with by the sections of the congress is given here:

- Soil structure
- Systems for testing soil fertility
- Soil minerals
- Soil organic matter
- Problems of soil biology
- Soil valuation
- Contributions of soil science to land classification
- Soil erosion and conservation
- Formation and classification of tropical soils

A definite list of subjects will be fixed later.

Publications

General and sectional papers written by members of the congress will be published in the Congress Proceedings. Only sectional papers dealing with subjects occurring on the definite list will be accepted for publication. A sectional paper must not exceed 1,000 words. Manuscripts typed in triplicate in English, French or German (with an English summary) must be in the hands of the Secretary of the Committee (mailing address: 3 Prof. van Hallstraat, *Groningen*, Netherlands) not later than November 1, 1949. The first volume of the proceedings containing the sectional papers will be sent to the members in good time before the congress, in order to make the discussions at the section meetings as profitable and as interesting as possible.

Congress Fee

The congress fee has preliminarily been fixed at 3 pounds sterling and 15 shillings or 15 U.S. dollars, and will entitle members to attend all the sessions and excursions *during* the congress and to

receive a copy of the congress proceedings. A special fee of 1 pound sterling or 4 U.S. dollars will admit accompanying relatives to the privileges of the membership of the congress, but not to receive a copy of the proceedings. The price of a copy of the proceedings for non-members of the congress will be equal to the congress fee.

Languages

The official language of the congress will be English, but papers may also be read in French or German. Interpreters will be present at the sessions.

Accommodation at Amsterdam

In view of the limited hotel accommodation at Amsterdam it is very desirable that the Organization Committee will know as soon as possible the approximate number of members and accompanying relatives, who may be expected to visit the congress. Therefore every soil scientist who intends to be present at the Fourth International Congress of Soil Science, Amsterdam 1950, is kindly requested to give preliminary notice of this intention as soon as possible by filling in the enclosed form and by sending it to the Secretary of the Organizing Committee, 3 Prof. van Hallstraat, Groningen, Netherlands.

Please do not destroy this circular.

You are kindly requested to forward this circular to one of your fellow soil scientists, if you have no further need for it.

1911 - 1912
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The question is raised and discussed whether or not soil can be formed from real laterite or ironstone as parent material. Such soils are reported from Rhodesia, West Australia, and Tasmania. They are generally erosive and infertile.

James Thorp discusses the American work in Japan with the Ando soils. Edelman suggests that similar soils may be found in Java. Such black soils in Java are so wet (from nearly continuous rain rather than poor drainage) that peat formation occurs within the mineral soil, thus accounting for the very high C/N ratio. He says that in Java such soils are used especially for Dehli tobacco, grown on the soils once in eight years.

Grange of New Zealand says that in their tropical areas one may find good laterite soils from basalt but gray leached soils from andesite.

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He also reminds us that these heavy black soils are self-mulching. This process may account for the appearance of carbonate nodules on the surface where there has been no general erosion. It also accounts in part for the relative uniformity in color of the upper solum just above a sharp boundary to lower material of strongly contrasting color. (Much of what he says reminds me of the Houston Black clay. I strongly suspect we shall need to take these out of the Rendzina group.) He points out that many of these black soils were not used extensively by the natives because they were so difficult to till with hand tools. From the discussion it is clear that these black tropical soils need a great deal of study in order that a proper group may be defined for them. Certainly, they shall be found in Uganda, the Union of South Africa, Tanganyika, and Rhodesia.

Since the natives have avoided these soils, many acres of them are available for exploitation. Often crops are late because so much rain is needed to wet the soils and close the cracks. Yet when the dry season comes the soils dry out quite rapidly. They seem to be capable of supporting good nutritious grasses. In Uganda and Rhodesia they may be found in areas of 30" of rainfall or less. In Australia they have been found in regions of

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18" to 30" of rainfall. Many areas have a natural cover of grass but they are mainly covered with shrub or open shrub. Some of those in Africa that are covered with thorn trees are rather easier to cultivate. In Australia, under the Acacia shrub, the soils have a well-developed hollow-and-mound micro-relief.

Similar soils are said to occur in the Dutch East Indies under a rainfall of about two meters on sedimentary rocks high in calcium carbonate. Verhoog believes that a high content of clay and a high content of calcium carbonate are necessary for the formation of these soils, which he refers to as "tropical black earth".

The session is over about 7:00 and I go directly to dinner at the Old Cock Inn. In the evening I attend a reception for the whole staff at Rothamsted, but I am too tired to stay very long.

June 15

The conference assembles at 9:30 and continues the presentation of papers.

Professor F. Hardy presents his paper on soil classification in the Carribbean region.

I speak briefly to summarize the points in my paper on the classification and nomenclature of tropical soils.

I explain that the American Soil Survey is in the midst of a revision of its system, especially as it relates to soils in tropical and sub-tropical regions. This revision is in no way an "overthrow"; rather we hope to reach a new approximation that will be nearer to truth than our old system. I point out that beyond the suggestions contained in my paper, others will be included in a forthcoming issue of Soil Science now in preparation.

I discuss the apparent conflict sometimes between local soil types and continental soil types. Logically, one works from the local to the general; but actually in soil classification it is necessary to work on the whole system at once. Of course, our present systems contain geographic bias and genetic bias. We should eliminate such bias but we can only do it gradually with the accumulation and synthesis of more accurate morphological data.

I try to stress especially the need for more accurate mapping, more accurate field morphology, and more detailed study of geomorphology in the tropics. Some very detailed soil mapping is essential. Probably, for the present at least, this can only be done on a sample basis. Some of the laboratory methods used in the temperate regions need modification in the tropics.

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I suggest that the word "Laterite" (with the capital) be omitted as the name of any great soil group, and that we confine the unmodified word to the materials as defined in my paper (I speak against any substitution with the word "ironstone", which will introduce even more confusion).

Some have suggested that we leave the great soil group names in abeyance for a few years until we have more data. Although some pedologists might like this, we won't be able to get away with it. Research is going forward and recommendations are being made. Some names are absolutely necessary and I think we will get along better with the soil group names, imperfect as they are, than with any substitutes. We need to do our best to define these names. Certainly, we shouldn't hold them as sacred or, as Professor Robinson has suggested, hold that an ideal example of each is already laid up in Heaven. Certainly, we shall need to redefine them and rearrange them several times in the years that lie ahead. Each approximation will be a little nearer truth. We must remember that the truth has many facets, all of which are valid, even though we are still unable to see the connections.

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G. H. Gethin Jones presents an interesting paper on soil classification and nomenclature in the British Colonies. His paper is quite good. He says wrongly, however, that one cannot do any mapping without having first a system of classification. Of course, actually, classification and mapping must go hand in hand. Only as we do accurate mapping, at least on a sample basis, can we decide on the modal profiles to be recognized in defining the local soil types and to be used as a basis for abstraction in developing the higher categories. Yet he points out that the examination of the agricultural lands cannot wait for soil classification. I fear that he has this backwards.

Dr. R. L. Pendleton emphasizes the need for better definitions of the great soil groups. I cannot quite agree with his proposal to use Mohr's "lixivium" for podzolization in the tropics.

Professor J. Baeyens gives his paper on classification of soils in relation to agriculture.

J. A. Bonnet discusses soils in Puerto Rico.

M. G. Aubert presents an interesting paper on the appropriateness of the vernacular names given to soil types by the natives in West Africa.

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N. V. Rounce speaks of soil classification in Usukuma. He agrees with Aubert on the utility of native vernacular nomenclature of soils in advisory work. He stresses the great value of native vegetation in soil mapping. Thus from this point of view it is easier to map soils before clearing than after. He says, and it is obvious, that they seriously lack detailed soil surveys. He emphasizes to the Conference that such surveys should be made in advance of any great land-use schemes, like the British Groundnuts Scheme. He points to several bad errors already made by expensive land clearing before the soil scientists had had an opportunity to study the soils.

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Professor C. G. T. Morison gave us a long and beautiful talk on the catena concept in African surveys. (He crowds some tiny thoughts into an enormous flow of beautiful English.) He presents a plea for Milne's catena. He talks a bit about "complexes" within the "phases", whatever that means. As related to vegetation, he seems to have: (1) eluvial complex on old upland with "ironstone" at various depths, (2) colluvial complexes on slopes, (3) "col-il" transition, and (4) illuvial complex on lowland. He says that all of these examples have been studied in detail as to both soil and vegetation. (I strongly suspect that the study has been mainly of vegetation and surface features and exceedingly short on the morphology of soil profiles and on geomorphology.) He speculates on how the catena will change in going to wet areas or to dry areas. His suggestions appear to me as altogether too speculative for serious consideration. Certainly, the scholar at his desk in Oxford can simplify the soils of Africa to a remarkable degree.

Immediately after the morning session, I go to a special luncheon with the Muir's, along with the other Americans, the French, and Professor Edelman. This is a very pleasant affair.

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Dr. & Mrs. Muir

request the pleasure of

Dr. C. E. Kellogg's company

at a luncheon party at their home on

Tuesday, 15th June,

at 12.45 p.m. for 1.0 p.m.

5, Moreton Avenue,
Harpenden,
Herts.

After lunch, I have a considerable conference with Aubert regarding arrangements for his visit to the United States next August.

At 5:00, we assemble again for the discussion of the materials presented this morning.

Dr. P. A. Loizides of Cyprus says that he regards the Mediterranean red soils as a general group with Terra Rossa only as a constituent member of the group on hard limestone. He maintains that there are Red soils of this broad Mediterranean group on diabase and other rocks.

Dr. Muir points out that in the Near East he found a very sharp change from semi-desert to Terra Rossa on limestone. In the same region, however, he noted a sharp change on basalt from brown soils to black soils with no red color. In Northern Syria and Lebanon on the high elevations he found Brown Forest soils with some podzolic soils on the sandy materials.

I am asked for my opinion: The Terra Rossa, where I have seen it, has been from hard limestone or from the alluvial or colluvial deposits originating from hard limestone. Usually, the limestone is nearly pure but sometimes it is quite siliceous. In Greece, if the

limestone is a bit soft, the Terra Rossa gives way abruptly to Rendzina with no red color at all. Perhaps strongly red soils do occur in the Mediterranean region on other materials but I have not seen them except where the red color has been obviously inherited from red rocks. Some have mentioned the Non-calcic Brown soils of the Western part of the United States. Generally, it would seem that these have more texture profile than Terra Rossa -- a texture profile likely due mainly to differential clay formation in place.

The discussion turns on the matter of sample mapping that I emphasized in the morning session. Professor Morison seemed to think that reconnaissance surveys, with a snatching of samples here and there, are the first requirement. Apparently, Keen takes a similar view, at least he seems opposed to sample mapping, although what he is for isn't clear to me. Ogg supports my position.

I point out that in laying emphasis upon detailed soil mapping, I refer especially to the mapping of characteristic sample areas as an integral part of the research for establishing soil types -- their limits and their modal profiles -- and for learning

their relationships to one another, to the geomorphological landscape, and to specific soil management practices. Certainly, one can scarcely define catenas or other groups until the constituent units are understood.

There is a good deal of confusion in the discussion about this matter. Some would apparently set up a dichotomy of: (1) no mapping or (2) a plan to map the whole of Africa at once. Then there is talk about expediency -- the need right now for some sort of general maps to guide farming. Then there is a good deal of discussion about general versus detailed maps, some of which verges on the absurd. In the Gold Coast a plan exists for a detailed-reconnaissance survey based upon a detailed survey of strips representing 1% of the landscape.

It seems to me that this discussion brings out a general lack of appreciation among many in the group of:

- (1) The logic of classification
 - (a) Natural
 - (b) Pragmatic
- (2) The concept of "category"
- (3) The distinction between soil classification and soil genetic processes

Some suggestions are made for a special group to collect data on the soils of the world. A few even go so far as to propose that this group lay down rules and specifications for the guidance of everyone under a

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In this connection the matter of records brings up the question of monoliths and colored photographs. My opinion is asked on these questions: Colored pictures of soil profiles and associated landscapes can be very useful. The soil profiles need to be well prepared so that the natural structure is clear and not confused with shadows including root shadows. The camera needs to be as near the profile as possible. Considerable skill is required for success. Even with skill one may find that individual rolls of film may be bad, especially under very humid conditions or if a long time elapses between exposure and development. To make good copies the copy camera should be adjusted for each individual slide.

After more than fifteen years of work the American Soil Survey has developed a set of color standards for soil descriptions and color names. These may be obtained from the Munsell Company.

I have this further to say about the classification problem: Soil classifications can be made in several ways depending on the purpose. One can classify soils on one or two selected characteristics (in contrast to inferred qualities like fertility or erosiveness)

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and perhaps meet some practical need satisfactorily. This depends on the purpose and upon the ranges in the other relevant characteristics in the local universe. But soil classificational units in a natural system must be defined in terms of all-known relevant characteristics in combination. The weight to give any one, or to a difference in the degree of expression of any one, depends upon the others in the combination.

This afternoon session breaks up about 7:00 and I return to the Old Cock Inn; then dinner, a little writing, and to bed.

June 16

I am up early in a cool and cloudy morning. I go down to the laboratory for my mail and then back to the Inn to wait for the bus to Cambridge. We leave about 10:00.

A few miles out toward Cambridge, I see some moderate to serious soil erosion on a cultivated slope of about 8%. The soil seems to be a fine sandy loam, probably transitional between Brown Forest and Gray-Brown Podzolic. This is an unusual sight in England. Apparently, most of the damage was done during the real hard shower of the morning of June 14.

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of about 6%. The soil seems to be a fine sandy loam,
probably transitional between Brown Forest and Gray-Brown
Podsol. This is an unusual sight in England. Apparently,
most of the damage was done during the recent hard shower
of the morning of June 14.

Most of the land is well-covered especially with meadows and small grain. There are a good many potatoes and vegetable gardens. About 11:40, we arrive at the University of Cambridge and go immediately to a small laboratory to hear a brief lecture by E. C. Childs on the research work done on soil drainage. He discusses the physical theory of water flow in soils as related to electrical phenomena and to drainage. He determines the water potentials and then develops electrical analogs for mathematical treatment.

We also see some work on soil structure and permeability. They are concerned with the relationships among permeability, pore-size distribution, and moisture tension.

We take a few minutes' walk to a nice restaurant for lunch and are back in the busses at 1:50 p.m. We drive generally northeast of Cambridge toward the fen lands. We make our first stop near the Old West River where we see excellent crops of wheat, oats, barley, potatoes, sugar beets, and peas. Some fields are irrigated for celery and other vegetables. The rivers are here banked to protect the land.

We drive on a few miles to the confluence of the

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K-1543. 12 miles northeast of Cambridge.
The Old West River in the fens.



K-1544. 12 miles northeast of Cambridge.
View in the fens.



K-1545. Northeast of Cambridge. Wheat on fens near confluence of main drains.



K-1546. Main drain in fen land.



K-1547. Northeast of Cambridge. Main drain in fen land.



K-1548. Near pumping station northeast of Cambridge in the fens. Members of the Conference.



K-1549. Northeast of Cambridge. Sugar beets on nearly black fine muck, similar to the Carlisle muck of Michigan. Long cultivated.



K-1606. Northeast of Cambridge on fen lands. Sugar beets on muck soil, like Carlisle muck.

KING'S COLLEGE CHAPEL



A GENERAL DESCRIPTION

Tax not the royal Saint with vain expense,
With ill-match'd aims the Architect who plann'd
(Albeit labouring for a scanty band
Of white-robed Scholars only) this immense
And glorious work of fine intelligence!
—Give all thou can'st; high Heaven rejects the lore
Of nicely-calculated less or more;—
So deem'd the man who fashion'd for the sense
These lofty pillars, spread that branching roof
Self-poised, and scoop'd into ten thousand cells
Where light and shade repose, where music dwells
Lingering—and wandering on as loth to die;
Like thoughts whose very sweetness yieldeth proof
That they were born for immortality.

W. WORDSWORTH

King Henry VI was only eighteen when in 1440 he began his foundation of a College at Cambridge. Three years later he enlarged his vision, and linked the new College, now to consist of a Provost, seventy Fellows and Scholars, and a body of Chaplains, Lay Clerks and Choristers, to his foundation at Eton. Selected scholars of St Mary of Eton were to pass on to the College Royal of our Lady and St Nicholas at Cambridge.

The King himself planned the dimensions of the Chapel, and laid the first stone on St James' Day, 1446. The actual architect is unknown; it may have been Nicholas Close, one of the six original Fellows; or John Langton, Master of Pembroke, first overseer of the works; or Reginald Ely, the master-mason. The Wars of the Roses hindered the building, and it is remarkable that, by the end of the reign of Richard III, as many as five bays were built, and roofed in with timber. In 1506 Henry VII visited Cambridge, and resolved to bring the Chapel to its full glory. He left money to continue the building after his death; and the fabric was completed by 1515: the last seven bays can be easily distinguished by the wealth of Tudor arms and badges both inside and out; they and the vaulting had cost (in the present value of money) about £240,000.

The visitor should stand first at the West Door, and look East at one of the noblest interiors in the world. Notice its grand proportions and its three unique features.

1. The **Stone Vault**, 289 feet long, 80 high, and $44\frac{1}{2}$ in span, a specimen of "fan vaulting," peculiar to England, and perhaps the most beautiful form of roof ever devised.

2. The great **Windows**, filled with stained-glass between the dates 1515-31 (except the West window, by Clayton and Bell, 1879). "These windows contain the finest series in the world of pictures in glass on a large scale" (*J. W. Clark*). They were begun by Barnard Flower, the King's glazier; the window immediately opposite the South Porch is certainly his work. After his death a second contract was made with a number of glaziers, mostly Flemings settled in Southwark. The glass may be said to be of English workmanship under Flemish inspiration and from Flemish designs. The series begins with the story of Joachim and Anne and the birth of our Lady and of our Lord (North-West window to the Screen). The life, death and Resurrection of Christ go all round the Choir. From the Screen to the South-West follow scenes from the Acts of the Apostles to the death of the Virgin. The scenes in the upper tier are generally "types" from the Old Testament and Apocrypha corresponding to the scene below: *e.g.* over the scene of Christ Rising is Jonah coming forth from the whale's mouth. In the central lights are "Messengers" with a scroll describing the picture to left and right by an appropriate scripture.

3. The **Rood Screen**, "the finest piece of woodwork this side of the Alps" (*Gotch*) dates itself between 1532-36, when Anne Boleyn, whose arms and monogram appear upon it, was Queen. The design and most of the work must have been done by Italians. Notice the beauty of the detailed carving in the pilasters, lunettes, etc., and the little figures on the stalls.

The **Chantry Chapels**, eighteen in number, are formed by the roofing in (observe the vaults) of the space between the deep buttresses which support the great vault. Some of them have old oak doors and ironwork, old panelwork, and stained-glass. To the two first on the left, their Altars have lately been restored. The woodwork in Provost Whichcote's Chantry is of the date 1678: the picture over the altar in the Founder's Chantry was painted c. 1480 and came from an Ursuline convent near Soest, Westphalia; in the window-lights is an interesting collection of Tudor badges. In the second Chantry on the right (Provost Hacomblen's) is the tomb of the only son of the great Duke of Marlborough, who died when a student at the College.

The **Choir Gates** are younger than the Screen; they bear the date 1636 and the arms of Charles I. Passing through them, we face the superb **East Window**, with its six scenes of the Passion. The thought behind its design is fine: the central figure of the lower tier shews the earthly judge, Pilate, washing his hands of a responsibility rightly his; above in contrast is the figure of the Crucified, bearing voluntarily a responsibility far heavier, and not His, the sins of the whole world.

An **Organ** was in existence before 1570, but it stood, apparently, not on the Screen but towards the East, midway between the two entrances to the side-chapels and behind the Altar. Christopher Tye, the Elizabethan composer, was first chorister, then lay clerk here; and, towards the end of the century, a yet greater name appears among the choristers—Orlando Gibbons. After the Restoration, the organ was mended and set upon the Screen. It was enlarged and rebuilt by Renatus Harris in 1688, and despite enlargements remains substantially the same. The woodwork of all the older organ cases seems to have been worked in to the present one. In 1932-4 the organ was completely renewed by Harrison and Harrison of Durham.

The lower part of the **Wood-work of the Stalls** in the Choir, and the eight canopies facing East are, like the Screen, the gift of

Henry VIII; the wainscoting with the carved elm-wood arms (of Henry VI, VII, VIII, Mary I, Charles I, King's, Eton, Cambridge and Oxford, etc.) were given by Thos. Weaver, Fellow, in 1633; the canopies, and panelling eastward to the new work were added in 1678.

The **Lectern** was given by Robert Hacomblen, Provost 1509-28. Notice its fine engraved design and the statuette of Henry VI.

The new work at the East end was designed by Detmar Blow, after many of the important architects of the nineteenth century had failed to satisfy. One panel includes a painting by Volterra, given by the Earl of Carlisle in 1790, which formerly hung over the Altar. Opposite is an Italian bust of our Lord of the early sixteenth century. The Altar is the work of Garner; the beautiful Cross, of Bainbridge Reynolds, who made also the Processional Cross, and the Crosses on the side-chapel Altars.

Two rich **Doorways** lead North and South into the Chuntries. The South-East Chapel (All Souls) is a **Memorial** to the King's men who fell in the War 1914-19. The North-East (St Edward the Confessor) contains ancient chairs and an early eighteenth century Genoese Altar-frontal. In the adjoining chantry is a fifteenth century pulpit, from which Latimer preached the Reformation in St Edward's Church, Cambridge. The University Sermon is preached from it in the Chapel every year on Lady Day.

In one of these Chapels or elsewhere, we would ask our visitors to kneel, and in this great House of Prayer, add their prayers to ours for the Chapel, the College and the whole Church of God.

A devout Prayer of King Henry VI himself

O Lord Jesu Christ, who hast created and redeemed me, and hast brought me unto that which now I am; thou knowest what thou wouldest do with me; do with me according to thy will, for thy tender mercy's sake. Amen.

For the Chapel

O Lord Jesus Christ, who art thyself the temple of the holy City of God, the light thereof and its surpassing glory; glorify and lighten, we beseech thee, with thy perpetual presence this earthly house built gloriously to thee; and be pleased both to inspire and to accept its worship day by day, the praise of thankful lips and the prayers of faithful hearts; who livest and reignest with the Father, the Holy Ghost, one God, for ever and ever. Amen.

main drains. Pumps are used to lift the water from the drains into the main dyked stream. Just now the lift is about twelve feet, six inches. Sometimes it is as much as eighteen feet. The drainage ways have a grade of a little less than one foot per mile. The main stream is about six feet above sea level (we are 26 miles from the sea) and the drains are some six to twelve feet below sea level.

We drive out into the well-cultivated lowland where there are sugar beets and other crops. I see some nearly black finely granular organic soil resembling our Carlisle Muck. The soil is neutral or slightly alkaline.

Muir calls the soil of this general area "Fen-peat".

We then turn and drive back toward Cambridge. In a little way we pass out of the muck soil very gradually and drive over low-lying Brown Forest soil.

We stop in Cambridge for tea and have a quick look among the Colleges.

On the way back to Harpenden I attempt some pictures of the erosion we saw in the morning. One sloping soil that showed a bit of erosion, resulting from the heavy rain day before yesterday, belongs with the local group "clay-with-flints".

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K-1550. University of Cambridge.

K-1552. Southwest of Boston, near Cambridge.
Remains of Iron Age wall remaining from
original Roman site.



K-1551. Southwest of Hitchen, near Cambridge.
Erosion of Brown Forest soil resulting from
unusual recent storm.



K-1552. Southwest of Hitchen, near Cambridge.
Erosion of Brown Forest soil resulting from
unusual recent storm.

I return to the Old Cock Inn about 7:15 p.m. very tired. I have dinner immediately, write and read for awhile, and then to bed.

June 17

I am up in another cold wet morning. The conference begins promptly at 9:30.

Dr. E. W. Crowther presents an excellent paper by himself and Dr. Stewart. He says that although there are only a few field experiments on tropical soils, among them are some of the very best -- as good or better than any in Europe or North America. For the tropics he now recommends a number of relatively simple experiments at many locations rather than a very few elaborate ones, in order to get a wider sampling of soil conditions.

Dr. A. B. Stewart speaks briefly.

Dr. F. Yates speaks on the design of experiments (a bit stuffily). He objects to the laying down of experiments simply to answer some immediate economic problem. He emphasizes the value of one-year experiments plus one additional year of follow-up to measure the residual effects. Of course, these will not give "final" results.

C. R. van der Merwe speaks on the fertility of



K-1553. Harpenden. The Old Cock Inn.



K-1554. Harpenden. The Old Cock Inn.

lateritic soils. He points out that the content of total nitrogen and total phosphorus is fair but that the available phosphorus is extremely low. Most of the soils of which he speaks are acid and low in organic matter and potassium. With cultivation, the organic matter may be rapidly destroyed, depending upon soil management practices. Although lime is needed, over-liming is a serious hazard. Superphosphate reverts very rapidly. Ground rock phosphate, or superphosphate mixed with lime, are better. Green manures and animal manures are both very helpful. Both pasture grasses and maize are very poor without manure and phosphate. Often citrus does well at first and then soon fails. Lucerne (alfalfa) can be grown on Red and Yellow (Lat^oasols) Lateritic soils with good fertilization, especially with phosphate. On these soils the native forest trees grow well.

Professor O. de Vries is not present.

Dr. C. H. Edelman discusses the maintenance of soil fertility in the Dutch Indies. He emphasizes the development of soil covers between 1910 and 1920 along with the use of phosphate. He sees no possibility of continuing shifting cultivation. (Obviously Edelman is referring to the crude native practice

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and is not familiar with the recent developments of the corridor system as worked out by INEAC. 1/) He finds the social problems for maintaining soil productivity in the tropics more difficult than the technical ones.

In the Dutch Indies so much of the irrigation water contains nutrients that many of the irrigated soils can be used indefinitely without further fertilization and fair to good yields obtained.

The Pacific War has brought tragic and catastrophic consequences through the destruction of many of the European plantations. The new masters, he says, are corrupt. He thinks that with a continuation of the present government more millions will perish. It is estimated that three million died under the Japanese control. He thinks many more will follow. He says conditions are not so bad on the islands besides Java because their populations are less dense and the damage was not so great.

Mr. G. ap Griffith summarizes his paper on soil fertility in Uganda. Under clean cultivation, with no crop or weeds, the nitrate nitrogen becomes very high

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in the rainy season. But under elephant grass (*pennisetum*), the nitrate goes down during the rainy season. Under growing elephant grass, nitrate is probably low because the grass is using it. This may account, he thinks, for (1) yellow coloring of coffee under mulch (why not simply a C/N ratio phenomenon?) and (2) the need for fallow a little while after elephant grass and before planting cereals. He also calls attention to a very large border effect -- sometimes nine feet -- of elephant grass strips.

Griffith also adds a note on termites by Harris. He explains how termites remove cellulose from mulches and the like. But termites do not use well-prepared compost. (This may be of considerable importance.)

Mr. T. N. Jewitt discusses soil fertility in the Zande district of the Anglo-Egyptian Sudan. He follows his paper rather closely. He says the soils in this area are mainly the "ironstone" catena described by Greene. He emphasizes the difficulty of laying out proper fertility plots where the large termite mounds are so numerous. The presence of stones and gravel in these soils does not mean lower yields as contrasted to similar soils free of stones and pebbles to four feet. He recommends the early burning of the savanna

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(as in the Congo). Since it will burn anyway, if the burning is done as early as possible the fire will not be so hot as later. He believes, as I do, that with complete fire protection and orderly shifting cultivation (the corridor system) fertility can be maintained. The best place to start is in areas with gallery forests, streams, and rock outcrops that may be used for parts of the fire lines.

Mr. M. Greenwood spoke on mixed farming and artificial fertilizers in Northern Nigeria. He also stresses that shifting cultivation is not necessarily bad. He emphasizes the great importance of phosphatic fertilizers. On the whole, his paper is good and important. He cites examples of natives already using placement methods and thinks that they can be taught to use fertilizer pellets. He says that if one uses a dibble to make an opening for the fertilizer, the natives may ascribe the benefit to the plant to the dibble rather than the fertilizer.

Mr. K. A. Davies was not present to give his paper.

Professor A. Demolon spoke briefly. He thinks it may be assumed that most tropical soils are too low in calcium and phosphorus for good nutrition of either cattle or people. He makes a plea for a study of the nutritional quality of crops. He thinks that in strongly lateritic

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soils pellets of phosphatic fertilizer will be much better than granular sorts. He feels that our understanding of nitrogen fixation by legumes in acid tropical soils is altogether inadequate. Since cover crops take nutrients from the deep soil and concentrate them at the surface they shall need to be used in most crop sequences.

Since some time remains, we go into a short period of discussion. There is a good deal of talk about the use of lime in the tropics. Most seem to feel that it is not generally useful but is needed in many important special cases, particularly for some of the leguminous cover crops.

In response to a request from the chairman, I speak somewhat as follows: In stressing the interdependence of the several factors in soil productivity, I should like to emphasize plant spacing somewhat more than Dr. Crowther did in his paper. In the southeastern part of the United States, this has been found to be especially important for improving the yields of maize. Since the maize crop uses some 50 percent of its nitrogen during July -- even within about two weeks of that month -- it responds to supplemental nitrogen dressings very greatly provided the soil has ample supplies of the other nutrients and

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water, adapted hybrid strains are used, and the plant population is increased. With all these, yield increases from 30 bushels per acre to over 100 bushels per acre are not rare. But if any one feature is omitted increases may be far less. That is, with the spacing commonly used by farmers one has only small benefit from the extra nitrogen dressing; close spacing, however, without adequate nitrogen may even reduce yields.

It is likely not possible to have enough nitrogen in the soil initially for optimum yields of maize on pervious soils in humid regions where the growing season is long.

Somewhat similar results from closer spacing have been obtained with potatoes grown under irrigation in the Western States. But here again, the results are closely dependent upon water and nutrient supplies.

The following of traditional crop spacing -- kept more or less constant regardless of manurial treatments, variety, or soil type -- can lead to great inefficiency in production.

The session is over at 1:00. I say goodbye to Professor Robinson who must go back to Bangor this early afternoon.

Shortly after lunch, and after some writing, I visit with Dr. Crowther about magnesium and oil palm. We then

water, adapted hybrid strains are used, and the plant population is increased. With all these, yield increases from 30 bushels per acre to over 100 bushels per acre are not rare. But if any one feature is omitted increases may be far less. That is, with the spacing commonly used by farmers one has only small benefit from the extra nitrogen dressing; close spacing, however, without adequate nitrogen may even reduce yields.

It is likely not possible to have enough nitrogen in the soil initially for optimum yields of maize on previous soils in humid regions where the growing season is long. Somewhat similar results from closer spacing have been obtained with potatoes grown under irrigation in the Western States. But here again, the results are closely dependent upon water and nutrient supplies.

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have tea at 4:15 and gather for a discussion period at 5:00.

First Dr. E. M. Crowther reviews a paper on field experiments and soil fertility problems left over from the morning session. In it, it seems to me, there is a little too much mixing of research work with advisory work. These two activities need to be coordinated but not mixed.

Crowther argues, I believe a little pedantically, against the use of the terms "available" phosphates, "available" potash, and so on. Apparently, he should prefer water soluble or what not.

He points out that often a very small amount of animal manure has a very large effect on yields in the tropics, sometimes for a period of as much as three years.

He states that one of the big problems with tropical soils is "how to get rid of the excess carbohydrates".

He emphasizes the need for forestry research to determine what trees are best for improving the soil in the long rotations of the corridor system.

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until we know more about the fundamental principles governing the behavior of tropical soils.

After dinner at the Old Cock Inn, I spend a very pleasant evening in Dr. Walter Russell's home with Sir John Russell, Dr. H. J. Page, Dr. J. Lebrun, and Professor J. Baeyens. Sir John's recovery from near death a year ago is truly remarkable.

June 18

Again the morning is cold and cloudy and I find myself with a very bad cold.

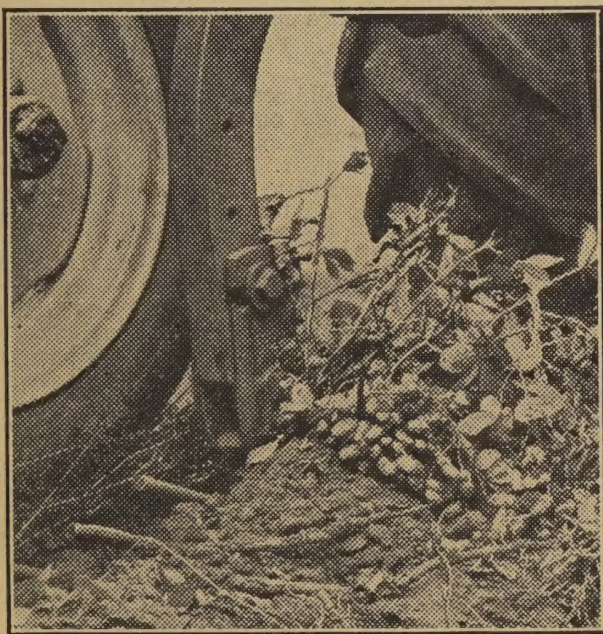
The sessions begin again at 9:30 with a paper on some ecological and soil relationships of the Algerian steppes by Professor C. Killian -- a fine old botanist.

Sir H. A. Tempany, a retired officer of the British Colonial Service, summarizes a paper which is itself a summary of a compilation of the results of a questionnaire sent to officers throughout the colonies. The summary may be useful although he apparently hasn't had too much direct contact with the matter first hand.

Mr. C. Maher discusses the problems of soil depletion in Kenya. He says that the dominant factor there is the intensity of the rainfall. Simple practices can be worked



HARVESTING GROUNDNUTS.—About 7,500 acres of groundnuts are now being harvested in the Kongwa district of East Africa. Mechanical diggers (above) pass down the rows, lifting the plants and shaking them free of soil. Side-delivery rakes then stack the nuts in long “windrows.” A combine harvester, passing down the windrows, bags the nuts and discards the leaves at the same time.



A close-up view of a groundnut digger at work (left), showing how the machine lifts the plants above the surface of the soil, where they are left to dry for some time before being harvested. Right: some of the bagged nuts being examined.

the Overseas Food Corporation would get only £30 a ton for its groundnuts in its first years, quickly falling to £20 a ton, whereas the price had risen to between £60 and £70 a ton.

There was now in the hands of the corporation—although not all yet in Africa—a full fleet of bulldozers and tractors, and adequate labour was being attracted. It had been decided to have a rotation of crops, including sunflower seeds.

It would be a great mistake, he said, to take a short view of the scheme. It would produce something of immense value to human life and also in L.S.D. This scheme and others which would follow it in other parts of the Empire were absolutely necessary for the survival of the nation and the Commonwealth.

PROSPECTS AND PITFALLS OF GROUNDNUTS SCHEME

THE CASE FOR SECOND THOUGHTS

By Lord De La Warr

No one who knows the grim facts of the food and raw materials situation throughout the world can look with anything but sympathy and hope at the attempt to turn 3m. acres of tsetse-infected bush in Tanganyika into agricultural land producing vegetable oils. Yet, in spite of the greatness of our need, and the fact that the British Commonwealth still has many idle acres, there is in Africa, as in Britain, a general feeling of disquiet and doubt about the whole project. Some, but not all, of this may be caused by the inevitable reaction against extravagant over-optimism at the outset and serious under-estimation of practical difficulties.

Most of the criticism has been concerned with the mistakes of the past year. As one who recently visited this area, I must confess to having been more concerned by the problems that lie ahead. Putting aside all the early promises which were made at home, those engaged on the scheme have done remarkably good work with hard-worn equipment and under unpleasant living conditions. They have accomplished much more than is represented by the 7,500 acres planted for this year's crop of groundnuts. They are preparing to sow a further extensive area for the next season. Certainly the costs per acre of clearing the ground and the costs of production are likely to be much higher than were originally estimated. All that one can say here is that the crop may still cost less than if Britain had done nothing but buy from Argentina, where only little oil at a very high price could have been obtained.

SMALLER FARMING UNITS

In the light of such argument one might think that there is room for congratulation, but other aspects of the scheme give cause for concern. The United Africa Company, with its long experience of plantation management, has handed over the control of groundnuts to the Overseas Food Corporation under State control. Whether the United Africa, or the State, or any other concern, it is questionable if any organization in the world is capable of running over 3m. acres of land in three units many hundreds of miles apart, embracing also the two different functions of reclamation and development on the one hand and farming on the other.

Here I would make my first main proposal. A distinction should be made between land development and farming. The Corporation might well become an Imperial Land Development Company. Once the land was cleared of bush and ready for the normal day-to-day operations of farming it could then be parcelled out in units of 5,000 acres upwards (that is, large enough for fully mechanized operation) on long lease to approved individuals, farming companies, or African cooperative associations. The Corporation, it should be remembered, will still have to carry out research, run demonstration units, and make and enforce rules about cropping and good husbandry as well as direct labour policy, frame conditions, and organize marketing and transport.

If the Corporation insists on attempting to farm the whole area itself, the difficulties which their agents have experienced up to date will be as nothing to what is coming to them. Many people have ranches hundreds of thousands of acres by leaving the land more or less in its primitive condition, stocked with one beast to every 10 or 20 acres. Others have raised wheat on the prairies or run single-crop

plantations on great areas. But groundnut cultivation is a farming proposition where virtually every acre will be under intensive and, it is hoped, mixed cultivation. It must, therefore, be farmed in separate and finite units; and farmed, moreover, by those risking their own money rather than that of the taxpayer. Risking one's own money has an extraordinarily sobering effect on the two great enemies of sound farming—haste and grandiose ideas.

ROTATION OF CROPS

My second proposal would be to stop talking about the "groundnuts scheme." Names sometimes matter a great deal and this one is too suggestive of monoculture and dustbowls for which the world is already paying a heavy price. If this scheme is to run on sound farming lines it must take the form of a general food production enterprise with oil-producing crops in the immediate forefront but only part of the rotation. At Kongwa the experimental work on alternative crops—such as sunflower, sorghum, castor, soya beans, maize, and millet—is impressive and should contribute to a proper crop rotation. Useful and important as this work is, the crops concerned are mainly extractive. It is hoped in some quarters that these crops will modify the need for a lye whether it be ploughed in as a green crop or fed off by cattle. If this is really so then the danger light is ahead.

These are big changes to propose: in the first place, that the Corporation should cease to farm land itself, and, secondly, that the £25m. already voted by Parliament for the specific purpose of growing groundnuts for this country should now be diverted to the more general production of food, much of which will never leave Africa. These changes, it is realized, could not be undertaken lightly nor without further examination and inquiry, but something of this nature, in any event, is what is required before vast new areas are opened up and new roads, railways, and harbours built at the cost of many millions of pounds not included in the original £25m. They are needed both on the merits of the situation and because only by some such step can the necessary confidence in the scheme be re-established. Such an inquiry must be on the widest possible basis and should also include the question whether this development on its present scale is the best use that can be made of our present limited national resources.

LOCAL REPERCUSSIONS

An inquiry of this kind must also take into account the fact that, as money continues to be spent in Africa, the population there will continue to increase and to demand higher standards of living. More and more of the extra food that Africa produces will be consumed by Africans and, to that extent, less and less by ourselves. Was this what was intended when the money was voted by Parliament? In any event, are we convinced that money spent in this manner will of a certainty yield more food for our people and save more dollars than if the same amount were spent on our own soil, or where the land is already cleared but is under-producing?

If, as is virtually certain, the British Commonwealth is to be driven into yet further schemes for increasing food production, an inquiry of this character should give much needed guidance as to how far this particular method is sound in its present form; how far it can be made good if sufficiently modified, and what other additional or alternative methods are available to us.

RACING

ASCOT MEETING

THE GOLD CUP

FROM OUR RACING CORRESPONDENT

The French have an excellent chance of winning the Ascot Gold Cup to-day for the third time in succession. Arbar moved in fine style on the course yesterday morning when galloped with Cadir. He is not a big horse, and it is difficult to believe that he can be as good as either Souverain or Caracalla II, but he seems very well just now.

At Longchamp in May he beat the Belgian Bayeux by four lengths over two miles and a half, with Tourment four lengths farther behind. Before that he had given 6 lb. and a fairly easy beating to Gypse over 15 furlongs. Gypse is thought to be a much better horse over two miles and a half, but there is no reason to suppose that he will reverse the placings. Roi de Navarre II would have no chance against Arbar on his French form, but since coming here he has greatly improved. Last time out he beat Vulcan by only half a length, although receiving 5 lb. But I believe that he had been eased before Vulcan made his effort. At Birmingham he beat Croupier by two lengths, with Cappielluca, who ran so well in the Ascot Stakes, third. Roi de Navarre II is by Vatelior, the sire of the moment, and I am sure he will run well here. Whiteway beat Auralia in the Yorkshire Cup. He won the Cesarewitch easily as a three-year-old, but he finished behind Cadir in the Jockey Club Cup and a long way behind Arbar in the St. Leger. It is impossible to avoid the conclusion that ARBAR should win.

Mr. H. G. Blgrave's Master Vote won the Hunt Cup yesterday for the second year in succession. He carried 18 lb. more this year. No horse has ever won the race twice before. Ridden by W. Johnstone, and trained by his owner, he was once again an easy winner with four lengths to spare. Final Score was clear of the field for the first five furlongs and it may be that his jockey made too much use of him. As soon as he weakened Star Witness passed him, and shook off the bunch on the stands side. Master Vote and Prince Peto, who was second, were drawn on the far side, from where all winners of this race have come in recent years. Master Vote went right away in the last half furlong. Beau Jinks was fourth, Flexton fifth, Kilbelin sixth, and Kind Regards seventh.

Once again France opened the day with a winner. M. Boussac's Coronation V, winner of her only race in France, stayed on more strongly than any of the home-bred fillies and beat Valkyrie by a head. The performance was better than it appears on paper, for the winner had to overcome difficulties in running and she had to change her position to challenge Valkyrie. Her breeding is unusual. Being by Djebel out of Esmeralda, Tourbillon is both the paternal and maternal grandsire. Esmeralda was second in the French Oaks and second in the Prix de l'Arc de Triomphe. Starry Scene failed to stay after being in front for three furlongs.

Several French-bred horses turned out for the next race, the Churchill Stakes, but here the attack was halted, and none of them was placed. Heron Bridge, trained in Ireland by D. Rogers, and ridden by the Irish jockey T. Burns, came from last place to first in the straight to win by five lengths. He was bred in Ireland by Mr. W. J. Mitchell at the Collinstown stud, and came here to win at Chester last year. There was a startling, and disconcerting, race for the Coronation Stakes for three-year-old fillies. Masaka resolutely refused to come up to the tapes. She was twice led up but ducked back, and when the starter finally let them go, she whipped round once again. Duplicité took the lead in the straight and was nearly home when she suddenly swerved across Tudor Lady. Tudor Lady

had not Fortuity meanwhile squeezed into second place. Another who might have won with a clear course was La Chipotte, who was unable to get through on the rails. The Stewards then took a hand and objected to the winner for crossing. She was subsequently disqualified. A black Ascot for backers was not lightened when Petition was beaten by Oros, who had failed so dismally at Epsom.

TO-DAY'S PROSPECTS

2.30.—Palm Vista, receiving 1 lb., beat Ashoka Kumari by half a length on the first day of the season. To-day Palm Vista has to give 9 lb. to Ashoka Kumari. Delirium gave 9 lb. and a head beating to Palm Vista at Newmarket. To-day he has to give 8 lb. This course and going will suit Falls of Clyde who meets Delirium at weight for age. The selection must be ASHOKA KUMARI.

3.0.—Golden Triumph won his only race in the north easily. Makarpura will be much better suited by this course than by Epsom. Roc du Diable, a son of Djebel, won a race at Le Tremblay by three lengths. Gai Street is a nice colt who won his only race by four lengths. My selection is MAKARPURA, if absent ROC DU DIABLE.

3.35.—The selection is ARBAR. The race is discussed above.

4.5.—Talan created a favourable impression when seen at exercise. Somali beat a weak field at Kempton Park when he first ran, but he is undoubtedly a good horse in the making. Tormie ran prominently for a mile and a quarter in the Derby. Lafontaine won at Newmarket, beating Woodburn and Rubaiyat. Derna II was second three lengths behind the French Derby winner Bey, when they first met at Longchamp. M. Boussac's selected of TALAN or DERNA II should win.

4.40.—Silver Gate, Vasant, and Hoylake seem the best. Vasant ran El Hawa to a head at level weights at Doncaster last year, and El Hawa, on his last running, seems to be 6 lb. better than Tollbooth, who has to give Vasant 10 lb. VASANT must, therefore, be the selection.

5.10.—Aldborough easily beat Speciality last time out. Jai Mahal was fourth in the Dewhurst Stakes last year. Rubaiyat and Danger have won races but I shall expect ALDBOROUGH to win.

NEWMARKET PROSPECTS

FROM OUR NEWMARKET CORRESPONDENT

2.30.—DELIRIUM. 3.0.—GAY STREET. 3.35.—WHITEWAY. 4.5.—TORMIE. 4.40.—LAISSER PASSER. 5.10.—FELL BLOOM.

BAN ON FRENCH HORSES RAISED

The Board of Trade has informed the Jockey Club that the regulation forbidding the importation of French horses into England has been withdrawn.

Lord Willoughby de Broke, who was nominated by the Jockey Club, has been unanimously elected chairman of Tattersall's Committee in place of the late Major Lionel Montagu.

ATHLETICS

THE KINNAIRD TROPHY

FROM OUR ATHLETICS CORRESPONDENT

The Kinnaird Trophy and Marathon Meeting, organized annually by the Polytechnic Harriers, will be held at their Chiswick stadium on Saturday afternoon. The first event will be started at 2.15 p.m.

Ten clubs will contest the Kinnaird Trophy, now held by Achilles, and a number of outstanding men will find themselves in opposition for the first time this season. Needless to say, the Olympic selectors will be interested spectators, and there is good reason to expect both good times and close finishes in a number of the track events. The sprinters will include McDonald Bailey, who thus will have an early chance to turn the tables on A. McCorquodale (L.A.C.) and several other of the runners who beat him so surprisingly in the Southern Championships last week-end.

Achilles will be represented in the sprints by J. Fairgrieve and N. McWhirter. It is hoped also that J. C. M. Wilkinson, of Oxford, will be able to assist his club, the Herne Hill Harriers. The meeting of A. S. Wint and H. G. Tarraway in the half-mile promises a keen race, and the fastest mile of the season should be run by H. A. Olney and D. G. Wilson, pressed by G. W. Nankeville.

There has been a record entry for the marathon race, the winning of which this year will carry with it the A.A.A. championship.

M.C.C. TENNIS PRIZES

SECOND ROUND.—W. M. Ross Skinner beat G. S. Inledon-Webber (6-0, 6-2, 3-6, 6-4); D. J. Warburton beat W. D. T. Hodgson (6-5, 5-6, 3-6, 6-3, 6-4); A. R. V. Barker beat P. A. Negretti (6-2, 6-3, 6-2); D. N. Cornock-Taylor beat J. M. Campbell (6-1, 6-2); M. A. Pugh beat M. G. L. Bruce (6-2, 6-5, 6-4); R. C. Riseley beat K. A. G. Crawley (6-0, 6-5, 6-0).

Time marches on!

We've all a job to do, a part to play



London Times - June 17
The Groundnuts Scheme

MR. STRACHEY, Minister responsible for the Government's groundnuts scheme, has just spent three weeks in Tanganyika seeing for himself the clearing of the bush and the first year's harvest of nuts. Yesterday he spoke again of the dearth of fats in the world, and laid stress on the need for a large-scale project to increase the output of vegetable oil—and also to meet Britain's responsibility for developing African territories. He expressed his satisfaction that the scheme is now under way in spite of bigger difficulties on the ground than the Government and their advisers had foreseen. LORD DE LA WARR looks to the future of the scheme in an article on this page. He recognizes, as most people will to-day, the need for bold development of food production in Africa for the sake of the rapidly increasing native population, as well as in the hope of providing a more certain supply of margarine for this country; but he questions the way in which the scheme is being carried out at a time when this country, unable to afford to spend money, skilled labour, or steel recklessly, must consider carefully the choice it makes between alternative investments in the search for more food.

The view of LORD DE LA WARR is that, while the clearing and preparation of the land can properly be undertaken by the British Government, the actual farming should be given over to approved individuals, farming companies or African cooperative associations, with safeguards for the conditions of labour, standards of husbandry and efficient marketing. This would be a modern application with new precautions of the well-tried way of allowing charter companies to develop territories in the Empire. Certainly there is no reason to suppose that the output of groundnuts and other useful crops would

be any less if the farm management were conducted on strictly commercial lines. It is unlikely, however, that the Government, now pledged to make a success of this project, would consider such a change. Indeed it may well be best that this experiment in State enterprise, to which so many hopes and prophecies have become attached, should be carried through to some conclusion so that the experience gained can settle whether the same policy ought to be applied elsewhere. The value of LORD DE LA WARR's shrewd counsel is to set out plainly the test which the enterprise, whatever form management takes, must pass to claim success.

MR. STRACHEY and LORD DE LA WARR are agreed that the scheme should be developed on broader lines than simply growing groundnuts. There is common sense itself in LORD DE LA WARR's contention that "if this scheme is to run on sound farming lines it must take the form of a general food production enterprise with oil-producing crops in the forefront, but only part of the rotation"; and he rightly emphasizes that "more and more of the extra food that Africa produces will be consumed by Africans and, to that

extent, less and less by ourselves." In the first year at Kongwa, the pioneer centre in Tanganyika, crop rotation trials have been started which should give sound guidance on sequence of crops that will meet consumers' needs both in Africa and here, while at the same time maintaining satisfactory fertility in the friable red soil. These are practical farming questions. Others, notably conditions of life for those, white as well as black, engaged on the project, call for skilled management and a watchful eye to see that the large number of men employed are not neglected. Neither sums that the British taxpayer will be required to invest are used to good advantage. Enthusiasm by itself cannot make the scheme successful.

Another important warning rightly given by Lord De La Warr is the critical position which local food supplies will undoubtedly reach with an increasing African population. This was stated even more strongly by the mission (paragraph 82), and they described how the scheme could be developed to produce large quantities of cereals for local consumption (paragraph 77). Indeed, it was just this aspect of the scheme which appealed so strongly to the chairman of the East African Production and Supply Council (paragraph 17). The mission regarded the long-term population problems in Africa as so important that they proposed: "In the more distant future oil mills could be established (locally) when the nut residues of high protein content would be available for human consumption" (paragraph 83).

In conjunction with these factors of population increase and food consumption, Lord De La Warr points out that "as money continues to be spent in Africa" the people will demand higher standards of living, and he asks: "Was this what was intended when the money was voted by Parliament?" The reply to this is contained in paragraph 13 of the White Paper, which states: "The progressive health, nutrition, housing, welfare, and labour policies that will be integral parts of the scheme will not only raise the standard of life of the undertaking's employees and their families; the increased national income and revenue from taxation will also make possible higher standards of living and better social services throughout the territories."

With regard to Lord De La Warr's proposals as to the future organization of the Overseas Food Corporation's activities, whereby he suggests that after development the land should be parcelled out on long lease "to approved individuals, farming companies, or African co-operative associations," I cannot do better than quote verbatim from the mission's report: "Serious objections would be raised to the concession of private rights over such a vast tract of Africa as 3,210,000 acres" (paragraph 38), and: "It would therefore seem desirable to provide from the outset for the ultimate taking over of the project, possibly in stages, first by the African Governments, and subsequently by the peoples of the territories themselves," and that "the second transfer of ownership, namely, from the local Government to the peoples of the territories concerned, is one entirely for local decision" (paragraphs 40 and 42).

I am, Sir, yours faithfully,

H. G. DODD, Secretary, Overseas Food Corporation.

7, Ulster Terrace, N.W.1, June 17.

THE GROUNDNUTS SCHEME

USE OF FERTILIZERS

INCREASING AFRICAN POPULATION

TO THE EDITOR OF THE TIMES

Sir,—May I be permitted to deal factually with a number of points raised in Lord De La Warr's article "Food from Africa"?

He states that the name "Groundnuts Scheme" is "too suggestive of monoculture and dust bowls," but he says nothing of the fact that all clearing and agricultural operations at Kongwa have been carried out with the primary aim of preventing erosion according to the recommendations contained in the East African Groundnut Mission's Report (H.M. Stationery Office, Cmd. 7030, paragraphs 63-72). Indeed, the Kongwa operations are probably the first instance in any country of comprehensive soil-conservation measures being applied to a whole region from virgin bush up to and throughout cultivation.

The Wakefield mission fully recognized the truth of Lord De La Warr's insistence that groundnut cultivation is a farming proposition, as is to be seen in their report. The rotation experiments at Kongwa, to which he pays tribute, indicate that crop diversification can be carried out even more quickly than was hoped for by the mission. Lord De La Warr considers, however, that the crops concerned are mainly extractive. He omits to say that fertilizers are being used to maintain and improve the nutrient status of the soil (paragraphs 65-66). He may be reassured that a grass ley will continue as the basis of the farming system at least until experiments prove that it can be safely modified.

out that will prevent soil washing where the rainfall intensity is not too great. He seems to doubt that inspiration and intuition are alone adequate for success in erosion control. He discusses the agronomic and engineering aspects of the problem but lays more emphasis upon such economic questions as home food production and income and such social questions as community organization and population density. After his paper there is a bit of general discussion in which the point is made that terraces and other mechanical devices are primarily useful when the other important management practices have been developed.

The Officer from Southern Rhodesia, Mr. A. D. Husband, describes their program for European farmers. It has some of the features of the American Triple-A program and some of those of the SCS program. The farmers of a community make an agreement with the government to handle the land properly. If they fail to do so, the government may do the work and compel the farmers to pay for it.

J. Baeyens gives a paper on soil fertility and banana culture in the Low Congo. (See Congo Journal 1947: There is a considerable dispute within INEAC about his theory of banana culture.) He gives his

paper in excellent French even though he speaks English but he says that his speaking voice is like an American jeep: It only runs well when it runs very fast.

Mr. P. A. Loizides discusses cereal-fallow rotations in Cyprus. He raises the very difficult question: Where does the nitrogen come from under fallow in Cyprus. It cannot possibly be from the reserves in the soil, he thinks. No legumes are grown. There is not enough carbohydrate for azotobacter. Some think that the chief advantage of fallow is nutrient accumulation, including some phosphate but especially nitrogen. Thus, fodder crops could replace fallow if fertilizers were used. Under the present organization of agriculture in Cyprus the grain farmers and the stockmen are entirely separate thus it is difficult to re-organize land use. Further, most farms are very small, with a total of 20 to 30 acres; and often these are in small plots of only about one acre. This pattern makes rotation and mixed farming difficult.

Mr. W. B. Haines discusses the management of rubber trees in Malaya. He has had opportunity for some long-time experiments. Although it is difficult to tap rubber trees without bias one can employ impersonal sampling methods. He found the girth of the trees to be the most

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trees in Malaya. He has had opportunity for some long-

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methods. He found the girth of the trees to be the most

significant single criterion. He also measures the foliage of the trees. For this he uses a mirror with colored strips for a scale, in order to read the gross foliage against the sky. This gives him an exceedingly rapid way of getting data where other measurements would be impossible.

He laid out fifteen experiments with 27 plots on immature rubber. He soon found that phosphate was the main requirement. Nitrogen was useful but not very important; and he had no benefit from potassium. His phosphate plots ran way ahead of the others in terms of maturity. Thus, on the plantations, it is economical to spend nearly all of their fertilizer money on phosphate and no part of it on nitrogen.

Following the Japanese occupation, the first residual effects are now available. Immature trees had been manured annually for seven years. Then they went seven years without fertilizer. One set of measurements showed that phosphate gave a 20% increase in the early period and a 12% increase in the second period. Also, in the second period, there was a negative effect of 10% for the potassium (I wonder if this is from a depression of magnesium and a consequent effect on phosphorus?)

On his mature experiments he has five kinds of plots: Check, nitrogen, nitrogen plus potash, nitrogen plus potash plus phosphorus plus an organic fertilizer, and nitrogen plus phosphorus plus potash. (He says a good deal of pressure exists for an organic fertilizer in Malaya.) These treatments were continued for ten years. On only one soil did they fail to give an effect: This was a very sticky alluvial clay. All others gave high significant increases. Although the plots receiving organic matter looked better there are no significant effects. Potassium gave no effect. On the mature trees nitrogen gave good effects. Seed production was also measured. This is doubled by phosphate. On the whole, the phosphorus had less effect on rubber production in mature trees than in the growth of immature trees.

In Malaya now there is much replanting in order to replace the old trees. Sometime ago he took over an area cleared from jungle and planted to tapioca. The soil is a hilly whitish clay from quartzite (?). Following the tapioca the soil was planted to rubber. The trees had been poor. They looked more like an orchard than the closed canopy of healthy rubber. Subsequently, the trees were abandoned for tapping and many

Dr. and Mrs. W. G. Ogg

request the pleasure of the company of

Mr. E. Kellogg

at a GARDEN PARTY at

1 WEST COMMON, HARPENDEN

from 3.30 p.m. to 5.30 p.m.

on Friday, June 18th

R.S.V.P.

were even cut for firewood. The soil was so poor that not even any shrub invaded the area. He then cleared this area and terraced it. The soil looked very poor indeed, but with phosphate fertilizers he had immediate success, and now a beautiful stand of well-growing rubber.

Professor F. Hardy reviews his paper on laboratory methods. He says he started by examining soil samples from "good" and "bad" soils for cacao near the experimental station in Trinidad. He found that the soils that grew good cacao had (1) abundant phosphate, (2) abundant potassium, and (3) a high C/N ratio, especially in the top six inches. He developed methods designed to make possible a great many determinations during the various seasons.

After this work, he began manurial experiments. The responses are quite different for young trees as compared to old trees. Then too, this cacao was grown from seeds and had some genetic variations. Most of his reliable experiments are with old trees but he is now beginning some new ones on young trees. Account has to be taken that cacao is often grown under shade and sometimes not. The shade trees are legumes and often grow to great height. Even though there is only one shade tree to six cacao trees it may offer serious

competition.

On the older trees, he had striking responses to phosphorus and some to potassium. He feels that the methods he has worked out could be applied to Africa on the basis of exploratory work he has been able to do.

He plots his data in columns of colors by profile on cards. This scheme can be carried on easily by the native technicians. He suggests that the soil examination needs to go to at least six feet. But the samples are taken more closely in the upper part of the section than in the lower part.

The session closes at 1:00 and I go to lunch. After a little time for reading and writing, while it rains, I go to Dr. Ogg's garden party at 3:30. It clears a bit just in time for the party.

I then go to the afternoon discussion session at 5:30. First, Mr. H. Burch presents a paper on the determination of phosphorus in soils. He says that we should get away from the expression "fixed" and "available" phosphate. But I am not clear what he proposes to substitute other than a complete description of the method in each instance, which hardly seems practicable.

Mr. D. W. Duthie points out that it is extremely difficult to train the African natives (apparently more difficult in East Africa than in Trinidad or in the Congo). Thus in East Africa, he says they are using mainly the rapid European methods in the laboratory.

There is some speculative discussion of where the nitrogen comes from beyond the supply in the soil, the decomposition of organic matter, legumes, and added fertilizer, stimulated by the morning paper of Loizides. Could some of it come from the air as ammonia? Is there some other non-biological fixation? Or must we still assume some uncertain, undemonstrated biological fixation?

These sessions are over at 7:00. I go back to the Old Cock Inn for dinner, a little reading and writing, and then to bed.

June 19

At 9:30 I go out to Rothamsted for the concluding session of the conference on tropical soils. First, we have the tentative summaries of the two committees established at the beginning, one on soil classification and mapping and one on soil fertility and management.

There is a great deal of informal discussion regarding the need for increased staff and the many technical

points that must be observed in carrying out research in these fields. The discussion brings up the great need for reworking both of the committee reports in order to capture the sense and conclusions of the conference. It is agreed that the committees should continue to study these reports, discuss them with individual members of the conference, and report again about a week later at the close of the field trip in southern England. 1/

Professor Morison laid before the conference a plan for the collection and printing of a memorial volume of the writings, both published and unpublished, of the late G. Milne.

During this session, Professor A. Reifenberg from Palestine joins the group. He had planned to come earlier but was delayed on account of the Arab-Palestine War. Likely he is the first person to register at an English hotel as an Israelite. He tells us a little of the sudden bombing of his university and how he passed through

1/ Added later: Since these reports in their final form will be first mimeographed and then printed, no attempt here is made to summarize them. For the most part, they contain the usual admonitions and recommendations intended for the guidance of responsible officials concerned with agricultural development in tropical areas.

the Arab lines in order to attend this meeting.

After lunch I pick up the things I need on the field trip and take the others to leave in Dr. Crowther's home.

At 4:00 in the afternoon I go with Dr. and Mrs. Crowther to a gorgeous pageant at St. Albans commemorating the thousandth anniversary of the founding of the city. This is held on a spot used by the early Romans and near the ruins of the great Roman theater that was destroyed by the early Christians. In fact, part of the stones for the very early church at St. Albans were recovered from the vandalism of the far older Roman buildings.

This is an impressive performance. Nearly 1,000 people must be taking part in it. Unfortunately, it is very cold and it rains most of the time. We leave about 8:00 before the last scenes are finished. I have supper with the Crowthers and spend the evening there.

June 20

We leave Harpenden for Oxford in large busses about 10:30 a.m.

On this route I am impressed with the relatively poor meadows. Most of them have many weeds and few legumes. The hay seems to be poor in both yield and quality. Of course, all of this recent rain makes haying very difficult.

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ST. ALBANS

948 MILLENNARY 1948

PAGEANT



2/6

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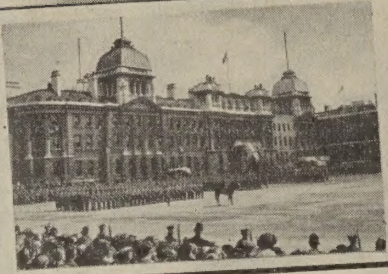
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948—1948



Souvenir Programme

21st—26th JUNE, 1948



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ST. ALBANS MILLENARY PAGEANT

Foreword

by

HIS WORSHIP THE MAYOR OF ST. ALBANS
COUNCILLOR W. R. HISKETT, J.P.

A MILLENARY celebration is an event of major importance in the life of any community, but it is unique to be able to celebrate, at one and the same time, the thousandth anniversary of three Churches, a School, and a Market.

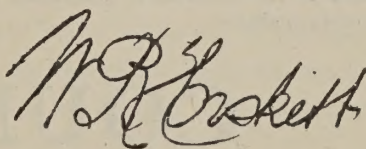
The fascination which history has for us is not a merely curious interest in a dead past, it arises from an innate conviction that past and present are inseparably linked. A community is a living organism, with its roots in bygone days, and the attraction of age is not its remoteness, but its links with the present.

Thus we get from the distant past a sense of space and grandeur, rather than an impression of something remote and disconnected.

We in St. Albans are members of a community with an ancient and illustrious record, for, times out of number, on this spot history has been made. We have reason to be proud of our long and colourful story, and its presentation in this Millenary Pageant is a fitting outlet for civic pride.

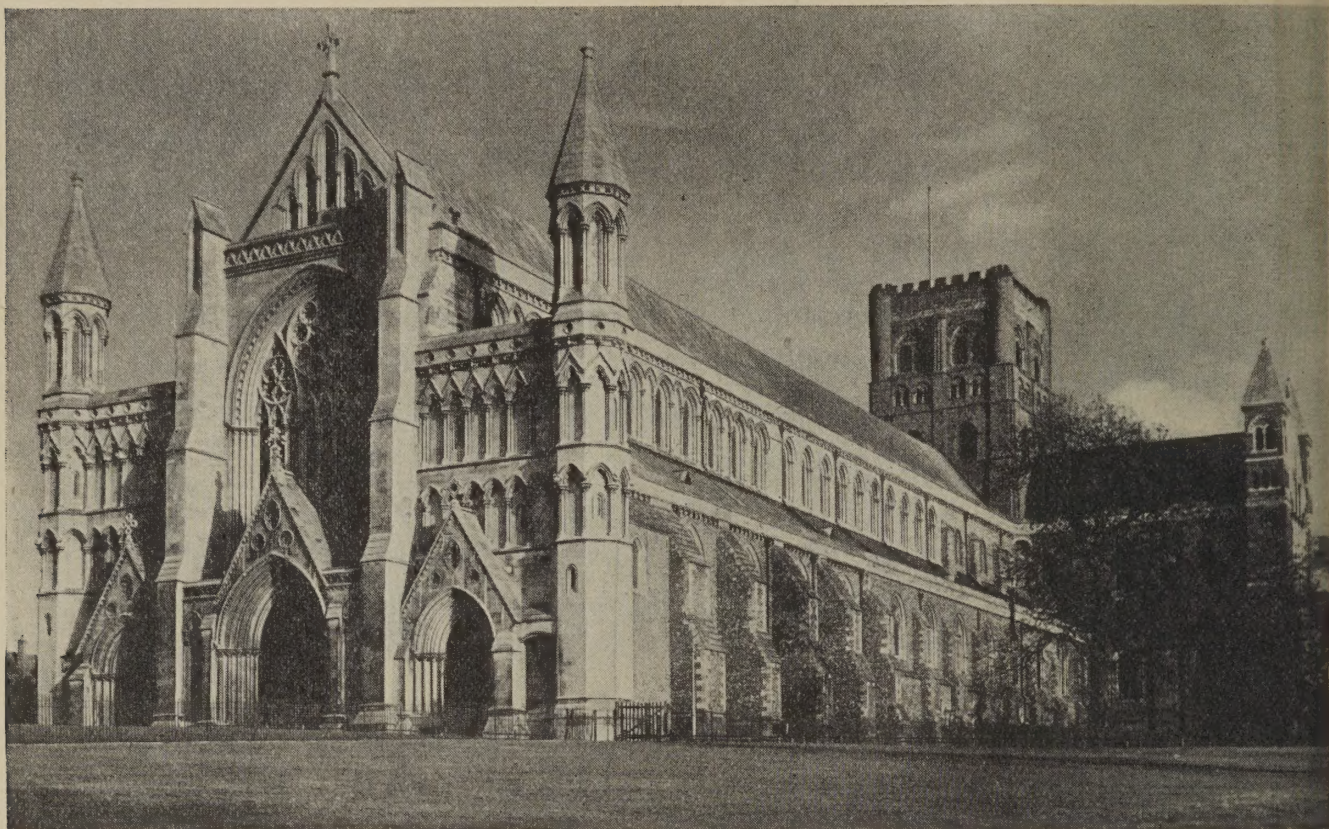
Few communities have made a more distinguished contribution to the life and development of the Nation; few can produce from the treasure houses of the past such a wealth of effort and achievement; few can present, quite so vividly, the story of struggle and progress, of failure and success, which has brought us where we stand to-day.

St. Albans, daughter of proud Verulamium; St. Albans, rich in ancient glories, we salute and honour thee!



MAYOR.

Britain's Heritage...



St. Albans Cathedral, consecrated at the beginning of the 12th Century, has the longest Gothic nave in the world.

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The architectural beauty of our ancient cathedrals and churches are part of Britain's heritage Week by week that heritage finds true expression in the pages of "Country Life" . . . a journal which, in its fine pictures of stately edifices and interiors, as well as in its authoritative articles on every aspect of the country scene, records the very essence of our national life.

The Proprietors look forward to the time when they will be able to meet the demand for "Country Life" in full, and tender their apologies to the thousands of prospective readers, who, under present conditions of paper shortage, find the journal almost impossible to obtain.

COUNTRY LIFE

PUBLISHED WEEKLY BY GEORGE NEWNES, LTD., TOWER HOUSE, SOUTHAMPTON STREET, STRAND, LONDON, W.C.2.

THE CATHEDRAL AND ABBEY CHURCH OF SAINT ALBAN

THE DEAN OF ST. ALBANS,
THE VERY REV. CUTHBERT C. THICKNESSE, M.A.

ALTHOUGH the exact year is unknown a little church was built on the site of Alban's martyrdom soon after his death early in the fourth century. In later years the Saxons built a larger church, when King Offa founded an Abbey in 793. The first Norman abbot built the great Church, much of which remains today. Thus for some 1600 years a church has stood on this site.

By the tenth century a village had grown up around the Abbey, and in 948 the sixth abbot, Ulsinus or Wulsin, decided to encourage more people to settle in the district. His object may well have been to increase the power of the Abbey at the expense of the neighbouring royal borough of Kingsbury, but in his work may be seen clearly the plan upon which the modern St. Albans is built. The keystone of this celebration therefore is Ulsinus.

The Abbey has always been closely linked with the town ; in the days of its prosperity in the middle ages when its abbot took precedence over all other abbots in the country ; at the Reformation when the townspeople bought the Abbey Church for £400, and in the years that led up to and followed the formation of the Diocese of St. Albans.

ST. MICHAEL'S CHURCH

THE VICAR OF ST. MICHAEL'S, THE REV. M. W. SHEWELL, M.A.

ST. MICHAEL'S CHURCH, one of the three founded by Abbot Ulsinus in 948, stands on the site of the Forum of the Roman City of Verulamium. It consisted originally of a nave and chancel with low pitched roof. In the twelfth century arches were pierced through the nave walls and the aisles added, and in the following century the clerestory was built, and the east end of the south aisle enlarged to form the Lady Chapel. The remainder of the south aisle appears to have fallen into decay. In the course of a thorough restoration of the church in 1867 Sir Gilbert Scott rebuilt the south porch. Thirty years later Lord Grimthorpe added the choir vestry, and built the existing tower, having demolished the fourteenth century tower which stood at the west end. At the same time he lengthened the church westwards by 25 feet.

Points of special interest to notice are :

The nave pillars, part of the original walls, and remains of Saxon windows ; a Norman window in the north aisle ; the Elizabethan altar table, and early Jacobean sanctuary chairs and pulpit with its hour glass and stand ; the tomb and effigy of Sir Francis Bacon in the sanctuary.



Where Past and Present Meet

The leisured air of an English provincial town is deceptive, for the place is usually a centre of vigorous commercial or agricultural activity, and its people are as well informed as their neighbours in the great cities about the movement of events at home and abroad.

Marching with the times, they nevertheless

contrive to avoid discarding the traditions and graces of the past. They do not permit the demands of business to excuse unfriendliness. They like efficiency tempered with courtesy and human understanding.

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ST. PETER'S CHURCH

THE VICAR OF ST. PETER'S, THE REV. A. M. FERGUSSON, M.A.

FOR nearly two centuries following the founding of the three churches by Abbot Ulsinus, there are available no records affecting St. Peter's. It is, however, recorded by Matthew Paris that Geoffrey de Gorham, Abbot of St. Albans, 1119-1146, "gave the church to the Infirmary of the Monastery for medicines for the sick," probably the appropriation to the Infirmary of the great tithes. The advowson of St. Peter's continued in the possession of the Monastery until the Dissolution, when it passed to the Crown and was granted to Sir Nicholas Bacon and Thomas Skipworth in A.D. 1544. During Queen Elizabeth's reign, it passed to the Bishop of Ely and his successors, to whom it belonged until the nineteenth century, when it passed to the Lord Chancellor.

The church was drastically restored in the nineteenth century, and there are now no traces of its Saxon origin. The nave is fifteenth century. There are a number of interesting monuments in the church, notably a brass to Roger Pemberton, a High Sheriff of the County, who died in 1628, and who built some almshouses nearby which still remain, and an impressive tablet in white marble surmounted by a bust to Edward Strong, who died in 1723 and who was chief mason to Sir Christopher Wren in the building of St. Paul's Cathedral. The organ in the church originally came from Windsor Castle.

ST. STEPHEN'S CHURCH

THE VICAR OF ST. STEPHEN'S,
THE REV. CANON A. F. S. HARDING, M.A.

THE Millenary Festival will begin with the commemoration of the foundation of St. Stephen's Church in A.D. 948. St. Stephen's, the third of Ulsinus's churches, stands on a hill looking towards the Abbey and City of St. Albans, on what was formerly a Roman burial ground. Relics associated with Roman burial rites are carefully preserved in the Church. Among them, the green hexagonal cinerarium found in 1848 is so unusual that, in the opinion of antiquarians, it must have contained the ashes of an important person—possibly a governor of Verulamium. The north and west walls of the church built by Ulsinus are still in existence, and a Saxon window belonging to the former, which had been filled in, was discovered in 1935. A larger building embodying these walls was built in A.D. 1115, and re-consecrated by the Bishop of Limerick. The Leper Chapel, now used as a vestry, dates from A.D. 1260, and originally stood apart from the main building. It is now incorporated in the church, but the "squint" through which a leper could follow the ministrations of the priest at the altar can still be seen. There has been much controversy about the history of the lectern in England and Scotland. During the Civil War in the seventeenth century it was concealed for safety in the Montgomery vault in the Chancel. It was re-discovered after remaining there for 150 years. There is a Roman milestone in the churchyard.

ST. ALBANS SCHOOL

THE HEADMASTER OF ST. ALBANS SCHOOL, W. T. MARSH, O.B.E., M.A.

ST. ALBANS SCHOOL is generally considered to have been founded in 948 by Abbot Ulsinus who is unlikely to have omitted education from his plans for the City itself and for the "Liberty of St. Alban" as a whole. Certainly in 1097 the School was flourishing and in 1195 is reported to have had more scholars than any other in the Kingdom. The year 1286 saw the School housed in a new building just outside the Monastery Gate. After the dissolution of the Monastery, the School was re-established by charter from King Edward VI in 1553 and was transferred to the Lady Chapel of the Abbey where it remained for over three centuries, receiving in the meantime a further charter and the Wine Licences from Queen Elizabeth. In 1870 it was finally transferred to the Abbey Gateway in which with numerous and extensive modern additions it still remains. The Gateway was built about 1361 to replace a previous structure destroyed by fire and is now scheduled as a National Monument. An upper room with the Stuart Arms still above the old fireplace is reputed to have been one of the meeting places of Parliament during the Civil Wars.

At present the School is a Public School for boarders and day boys with a total of 450 boys. The winner of the Olympic 800 metres at Los Angeles in 1932 was a Master at the School, and an Old Boy of the School gained the first D.F.C. and the first bar to the D.F.C. awarded during the recent War in which a hundred Old Boys and Masters gave their lives.

ST. ALBANS MARKET

THE TOWN CLERK OF ST. ALBANS, W. B. MURGATROYD

ST. ALBANS MARKET was founded by Abbot Ulsinus and still flourishes. The Abbots held the market rights until the dissolution of the monastery, when they were vested in Henry VIII. The townspeople had long been dissatisfied with the Abbots' control and doubtless rejoiced in 1554 when Henry's son, Edward VI, granted a Charter incorporating St. Albans as a borough and giving the market rights to the Corporation.

The matter did not end there, for Lord Salisbury tried to secure the market rights for himself, when doubts were cast on the validity of the Charter. But the Corporation successfully defended their position (pawning the Corporation plate, incidentally, to contest the action). Charles II eventually confirmed the Corporation's authority over the market in a new Charter of 1660.

Wednesdays and Saturdays are market days under the Charters. Wednesday is by custom Cattle Market Day, now shorn of much of its former importance. On Saturdays, however, the General Market in St. Peter's Street presents a busy and colourful picture, attracting shoppers and stallholders from within and without the City, and it is easy to imagine similar scenes back through the last thousand years.



"Opportunity has a wide compass"

WENTY-SEVEN years ago the de Havilland company came into existence in two wooden sheds on an aerodrome at Stag Lane, off the Edgware Road. It was formed by a small team of enthusiasts who had worked together during the first great war, when thousands of aircraft had been built to the designs of Geoffrey de Havilland. Under his leadership, and with an order for two wood-and-wire aeroplanes, they faced an incalculable future.

Today, led by the same men, de Havilland has become a world enterprise. It encompasses the building of aircraft, turbine and piston engines, and propellers, and its products are prominent in both military and civil fields. Indeed, they are responsible for a large share of the current exports of the entire British aircraft industry.

In the principal Dominions are other de Havilland companies, themselves twenty years old, forming the basis of a world-wide distributing and servicing organisation of long standing. The Canadian and Australian companies, with the experience of large-scale production during the second war, are now building aircraft to their own design.

In facing responsibilities which are greater than any that de Havilland has undertaken up to the present there can be no doubt that a factor which will stand the enterprise in good stead is its distinctive feature of broad technical capacity—the resources for developing the aircraft and power plant, as it were, under one roof. This becomes increasingly important when one begins to contemplate public travel at speeds in the region of 500 miles per hour and eight miles above the surface of the earth.

D E H A V I L L A N D

ST. ALBANS MILLENARY PAGEANT

President

THE RIGHT HON. THE EARL OF VERULAM



Chairman of the General Committee

HIS WORSHIP THE MAYOR OF ST. ALBANS,
COUNCILLOR W. R. HISKETT, J.P.



Chairman of the Executive and Finance Committee

CAPTAIN J. M. DONALDSON, M.C.



Vice-Chairmen

THE VERY REV. THE DEAN OF ST. ALBANS
and ALDERMAN W. BIRD, M.B.E., J.P.



*Pageant Master
and Author of Pageant Text*

CYRIL SWINSON



Master of the Music
ARTHUR WALLER, A.R.C.M.

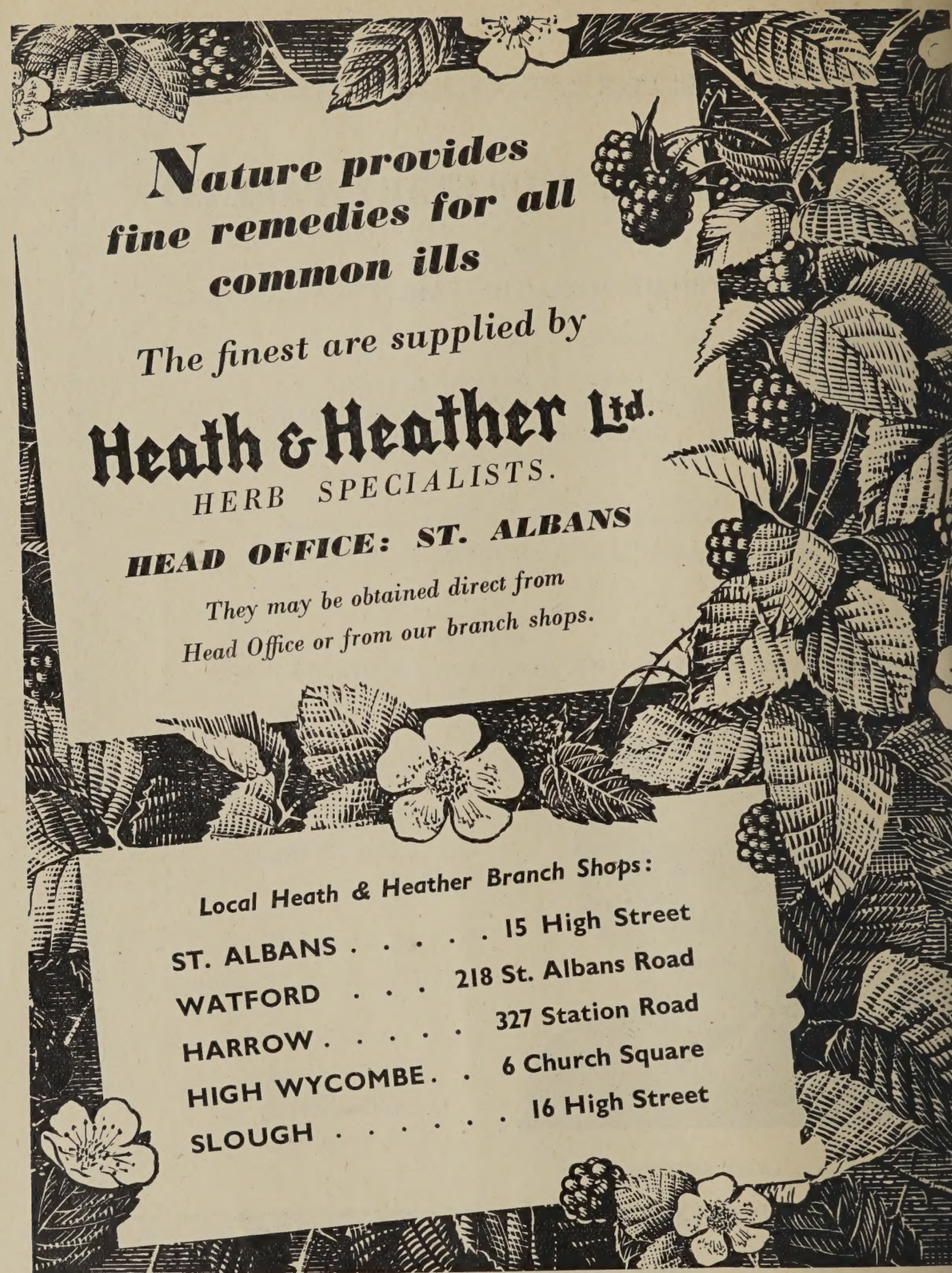


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ST. ALBANS MILLENARY PAGEANT

Synopsis of Scenes :

PROLOGUE

EPISODE

1. THE MARTYRDOM OF ST. ALBAN, A.D. 303
2. KING OFFA FOUNDS THE ABBEY, 793
3. ULSINUS HAS A PLAN, 948
4. HOLY DAY, 1440
5. QUEEN ELIZABETH VISITS GORHAMBURY, 1572
6. KING CHARLES I VISITS THE SCHOOL, 1626
7. THE CIVIL WAR, 1643
8. WHIGS VERSUS TORIES : AN ELECTION SCENE, 1722
9. ST. ALBANS IS A CITY, 1877

EPILOGUE

A Banking Pedigree



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Prologue

A fanfare sounds. The Chorus enters with attendants, some bearing banners of St. Michael's, St. Peter's, St. Stephen's, the School and the City. As they move slowly forward the Choir sings the Pageant Hymn.

Lift up your hearts on high,
Sing and rejoice;
Lift up your hearts on high,
Sing with one voice.
Sing of our ancient town,
Tell of her glory,
Tell of her sorrows, too,
Tell all her story.

Saint Albans, Saint Albans,
We honour thee to-day.
Saint Alban, Saint Alban,
We follow in thy way.
Bless our endeavours, Lord,
To Thee we pray
Give us new courage, and
Hope for to-day.

Lift up your hearts on high,
Sing with one voice.
Lift up your hearts on high,
Sing and rejoice.

The Chorus leaves his attendants and comes forward.

CHORUS

Lift up your hearts on high !
A thousand years ago the Abbey stood on yonder hill ;
She stands there still, a beacon of our life and hopes.
And through the centuries between, the city comes to
life around her gates.
New churches and new schools arise : the tentacles
of civic life stretch out.
The city that the Abbot Ulsinus first dreamed about,
lies here before our eyes.
Pause now, and for a moment contemplate the plan
that Ulsinus devised a thousand years ago.
He built three churches, and he planned that each
should succour and support the folk that came to
dwell around them.
St. Michael's to the West.
St. Stephen's to the South.
St. Peter's to the North.
In the shadow of the Abbey Church he planned a
school.

And at the Abbey Gate he caused a market to be set
up where all could freely come to buy and sell.
We gather here to-day to celebrate his work ; to
marvel at his vision, and to praise his good intent.
But more than that.

We venerate the men who came before the Abbot
Ulsinus :

The men who built the Abbey Church ;
The men who brought the faith to Verulam ;
The men who lived and died that we might call this
city now—St. Albans.

Lift up your hearts !

St. Alban is our patron saint : the token that we love
and sometimes fail to cherish.

The torch he lit we aim to keep alight and proudly
bear, to pass to others down the centuries, as it has
passed to us from Ulsinus a thousand years ago.

Lift up your hearts on high !

As they move away they sing the Pageant Hymn.



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Episode 1

THE MARTYRDOM OF ST. ALBAN, A.D. 303

It is early morning. Country people with produce to sell pass by, some pause to make a votive offering—a little oil, some cakes or a few pine cones—at the altar of Cybele.

They set up their stalls, and are joined by potters, weavers, oil dealers, sellers of leather, money changers and wine vendors. Slaves with water-pots pass on their way.

A dark-robed stranger gathers round him a few country folk and slaves, who listen to him with great attention.

Citizens enter : Imperial officials and tax gatherers, merchants and civic dignitaries, some accompanied by their wives and children, with slaves in attendance.

Alban, a Roman officer, enters. He avoids the altar, and as he returns many salutations his eye searches the crowd. He sees the dark-robed figure and joins him.

The Chief Magistrate enters, with his wife on a litter. The citizens begin to form into a procession to the altar, to celebrate Vestalia, the most important summer festival, but slaves run to the Magistrate to tell of the Emperor's messenger approaching from London.

A praefectus alae on horseback, with soldiers in attendance, enters. The Chief Magistrate greets the Emperor's messenger.

The drums roll, and all eyes are turned to the dais. The Chief Magistrate reads from a scroll handed to him by the messenger.

CHIEF MAGISTRATE : "I, Diocletian, by the grace of the gods, Emperor of Rome, of Britain, Germany and the East do hereby decree :

All Christian churches shall be destroyed :

All copies of the Christian scriptures shall be burned :

All Christians in honourable positions in my Empire shall be degraded :

All Christian freemen shall be deprived of liberty Unless they do renounce the Christian God and turn again to the true and ancient gods of Rome.

I, Diocletian, decree this."

There is consternation in the crowd. The little group around the dark-robed figure melts away, until only Alban is left.

CHIEF MAGISTRATE : This edict of our noble Emperor, the great and mighty Diocletian, is now enforced. Let all be warned that any who blaspheme the ancient gods of Rome shall die.

He leads the way to the altar. Soldiers move to the various entrances. The ceremonies proceed, all face the altar, all except Alban and his friend who linger at the edge of the crowd.

ALBAN : My friend, I knew this hour would come,
The storm clouds have been gathering long.
Haste now, while time remains, for you have work to do.

The country folk will hide you till the sky is bright again,

And you can tell once more the message of the one, true, living God.

HIS FRIEND : I cannot go, the guards are at the gates.

But they will let you pass, Alban, you are a Roman officer.

You must go. You are a follower of Christ.

You can tell to others the tidings that I brought to you.

ALBAN : No, no, you are a priest.

You can give comfort that I have no power to give, Can minister, absolve, and in His name bestow His blessing.

You must go.

There is no time to lose, the pagan rites are almost done.

Here, take my cloak, my helmet and my sword, the guards will let you pass in these.

I will wear your gown, and stay here in your stead, until the danger passes.

It is the only way.

While they exchange robes, the ceremonies at the altar reach their climax. The worshippers cry out in adoration, and make obeisance.

ALBAN : Salute the guards in Roman fashion as you go,
But first, bestow on me your blessing if you will.

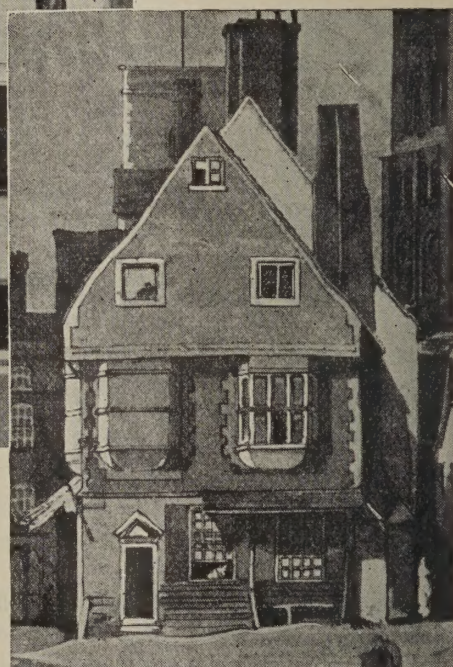




The Gables, Market Place, St. Albans

Cherry

The
Boots
Chemists



By kind permission of E. S. Kent, Esq.
Old Market Place, St. Albans, 1803

The Gables in Market Street is among the few old buildings still standing in St. Albans. Built in 1637, the original roof and timbers are still in position.

The fireplace in the Library is a fine example of Elizabethan open hearth styling.

The Manager of this branch of Boots the chemists will be delighted to arrange for visitors to be shown round this historical building.

are proud to be associated with St. Albans and send their hearty greetings to the city on reaching its millennium.

Alban kneels before him.

HIS FRIEND : It should be I who ask your blessing, Alban.

I go unwillingly ; I fear for you, my son.

I pray God in His mercy may spare us both, and In His Name I bless you now, and leave with you the token of His cross.

He blesses Alban, and gives him a cross. They embrace and the priest hastens away. Alban sees him salute the Roman soldiers. They return the salute and let him pass.

Two men on the edge of the crowd watch Alban. They observe he does not make the final obeisance to the gods, and as he walks away they follow him.

The ceremonies over, one of the men runs to the Chief Magistrate as he returns to the dais, and points to Alban.

MAN : He did not worship at the altar of Cybele. He did not make obeisance to our gods.

MAGISTRATE : Bring the man here.

They bring Alban before the Magistrate, Alban's face is hidden by the cowl of the cloak.

MAGISTRATE : Of what family or race are you ?

ALBAN : What does it concern you of what stock I am. If you desire to hear the truth of my religion be it known to you that I am a Christian.

MAGISTRATE : What is your name ? Tell it to me immediately.

ALBAN : I am called Alban.

The crowd are amazed, and murmur his name among themselves. There are hurried whispered conversations among the Magistrates.

MAGISTRATE : Alban, if you would enjoy the happiness of eternal life,

Do not delay to offer sacrifice to the great gods of Rome.

ALBAN : I worship only the true and living God.

MAGISTRATE : Alban, do not desert the gods of your family. The gods that have brought prosperity to the Emperor and to Rome.

ALBAN : Your gods are false, my God is true.

The Magistrate is enraged. The crowds draw back in horror and dismay.

MAGISTRATE : Then you shall die.

Let all believers of this Christian God take warning. They too shall die unless they turn to the altars of our gods once more.

But scourge him first : men's minds are often changed with whips.

Soldiers with leather-thonged whips come forward, and Alban is scourged. The crowds recoil at every lash and some cry out.

When the scourging is done, the Magistrate speaks to him.

MAGISTRATE : Alban, Roman citizen and soldier, Turn now to the gods of your country, and all will be forgiven.

Alban shakes his head.

MAGISTRATE : Then you must die. Take him away.

He points to the hill beyond the city. The soldiers lead him away. The crowd surges forward, but the soldiers keep them back, only a few children are allowed to come near him.

At the top of the rise, Alban turns to face the city once more.

ALBAN : With my last breath I do affirm my true belief in God ;

With my last words I do conjure you all to follow in the steps of Christ ;

With my last prayers I pray that God will lead you from the pagan gods of Rome.

I say farewell to all my friends :

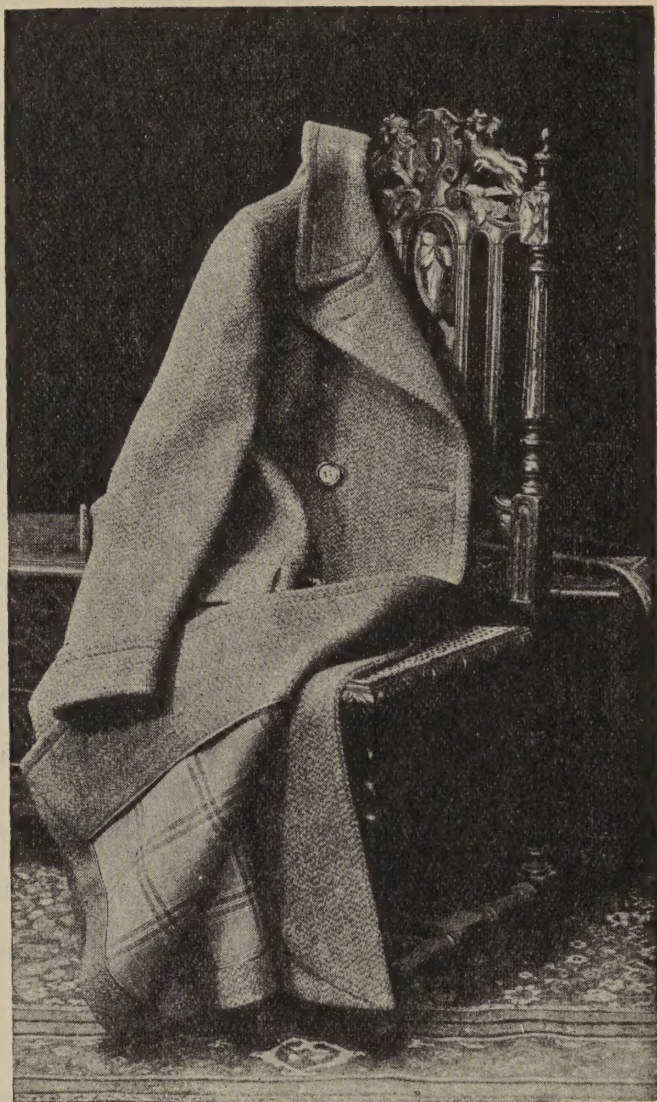
Farewell to Verulam and this fair land,

Farewell to all I love,

Farewell.

He raises his hand as if in benediction, and turning goes quickly out of sight, and to his martyrdom. The crowd hesitate a second, and then rush forward to follow him.





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Episode 2

KING OFFA FOUNDS THE ABBEY, A.D. 793

CHORUS

In the years that followed Alban's death
A little church was built, to mark the spot where he was killed.
The knowledge of his martyrdom became a legend in all Christian lands.
And many pilgrims came to pay their tribute at his shrine.

But darkness fell upon the land.
The Romans had departed, and in their place
Came Angles, Saxons, Jutes.
The countryside was ravaged and destroyed;
The people lived in fear.
Then came the Saxon king of Mercia, Offa by name.

He came to Verulam, as you shall see
To gain a foothold in eternity.

Small boats come into view on the lake. Men and boys come up from the lake with fish and game. Horsemen, rough and warlike, ride on from the west, and racing towards the men, apprehend them. The men beg for mercy but are forced to hand over their fish and game. The horsemen depart leisurely to the west. A group of humble folk enter, men, women and children. They meet the men, who tell them that robbers are abroad.

They are about to proceed, when the robbers return. They are riding hard, and look back as if pursued. In their haste they drop their spoils. The peasants scatter and hide beneath the trees.

A group of men comes into view to the west: Humbert, Archbishop of Lichfield, Unwona, Bishop of Leicester and Ceowolf, Bishop of Lindsey, with a military escort.

The party seems uncertain of its way. A few of the peasants, sensing that the strangers are on a peaceful mission, come out of hiding.

An officer approaches them.

OFFICER: Peace be to you. Tell me, good people, if we are near the place called Verulam?

MAN: This is the place called Verulam.

OFFICER: The home of Alban, saint and martyr?

MAN: Ay, it is said to be.

ARCHBISHOP: Tell me, if you can, where lie the relics of the holy Alban.

MAN: The relics? *He shakes his head.*

ARCHBISHOP: We come here, at the command of Offa, King of Mercia, to find the relics of the saint.

Think hard, my man, the King will shortly meet us here, and will be sore displeased if we have not found them.

The man, somewhat perplexed, consults the others, but they shake their heads.

ARCHBISHOP: The holy Bede has written of St. Alban in his history. He tells there of a church upon a hill, where pilgrims come to honour God and venerate the relics of St. Alban. Where is the church?



MAN: When I was a boy, it stood on yonder hill. But then came men from foreign lands. They ravaged all the countryside, they burned and wrecked our homes; they took our cattle and they sacked the church. Some say they took the bones of holy Alban with them, but others say they are hid away until peace comes again, and robbers cease to haunt the countryside. There is a little church, the robbers overlooked. It is hidden in the wood: St. Germain's it is called.

ARCHBISHOP: St. Germain's! The holy Bede tells of St. Germain and his visit here some centuries ago. Perhaps the holy relics are bestowed safe in the church?

MAN: It is a small deserted spot, and few of us dare venture there, while robbers roam the woods, but we will show you where it is, most holy Sir.

ARCHBISHOP: Go, my Lord Bishop of Lindsey, we must prepare the church for service once again.

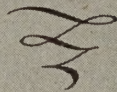


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LEICESTER : Your grace, I think the King approaches.
See, there, the horsemen riding through the trees.

From the south come into view horsemen and soldiers on foot, escorting King Offa, and his Queen, his eldest son, and lesser kings, nobles and clergy. The Archbishop greets him.

ARCHBISHOP : All praise to God for your arrival here at Verulam. This is indeed a holy moment, when the King himself pays tribute to Almighty God and to his servant Alban.

OFFA : My greetings and my thanks, your grace of Lichfield. Where are the relics of the holy Alban that we directed you to find ?

ARCHBISHOP : I have good news, my liege. This is the place where Alban lived, and where he died, and where a church was built, and where his relics were preserved, but in the troubled times—before your reign—the relics disappeared.

OFFA : I had hoped they would be here.

ARCHBISHOP : It is believed they are here, but hidden until God reveals them to His servants, who will care for them and honour them with reverence.

OFFA : That time has surely come. At Bath one night, an angel spoke to me and bade me come to Verulam. And on our way a bright light guided me, and pointed out the road to Verulam. The guiding hand that brought me here, it surely now will show me where the relics of the Saint lie hid. We will search the ground.

ARCHBISHOP : If you so wish we will search the ground.

OFFA : It is my wish. I, the Queen, my son, the kings and others, who came with me from Bath, will join the search. Let all depart, search every inch of ground.

All assembled scatter, and begin to search the ground. Suddenly a bright light shines forth from the ground. All hasten to the spot. Spades are quickly brought. The earth is uncovered, and soon a stone coffin is unearthed, and raised.

The King and the Archbishop approach, and the crowd falls back. Kneeling, the Archbishop lifts a skull from the coffin and hands it to the King. He holds the skull aloft, and all fall to the ground in veneration.

OFFA : Thanks be to God this day. I am unworthy to hold the skull of blessed Alban in my hand. I am a sinner, who in his time has done great wrong, but now desires to make amends. I vow to build an Abbey Church near Verulam, where Alban's relics can be safely stowed, and where good men and women will offer prayers unceasing for me and other sinners.

ARCHBISHOP : Thanks be to God.

ALL : Thanks be to God.

OFFA : You, Wisigood, shall be the abbot of this Church, and in your keeping I now place the sacred relics of the Saint.

Wisigood comes forward, and kneeling receives the skull which he replaces in the coffin.

WISIGOOD : May this great work be blessed and glorified, and may it ever be a living symbol of our love for God.

ALL : Thanks be to God.

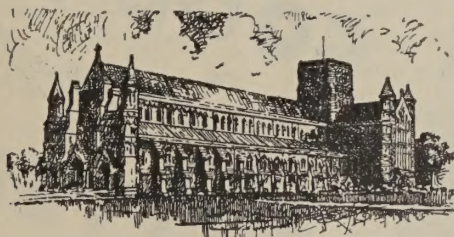
ARCHBISHOP : Until the Church is built, let us in all humility, bestow the sacred relics in St. Germain's Church, and as we go sing forth His praise on high.

OFFA : Thanks be to God.

ALL : Thanks be to God.

The coffin is raised aloft, and in solemn procession the King, the Archbishop, and the rest depart singing a hymn of praise.

The men and women, and the children with them, gaze in wonder. They feel a new era has begun, henceforth they can walk boldly and without fear. They join the end of the procession, but two of the boys dart off and rescue the game and fish that the robbers dropped in their hasty departure.



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and a
BETTER DAY

Episode 3

ULSINUS HAS A PLAN, A.D. 948

CHORUS

King Offa kept his word.
The Abbey Church was built and well endowed with grants of land.
The Abbey prospered and as the years passed by
More pilgrims came to visit Alban's shrine,
And many families found a home
Within the bounty of the Abbey lands.

Then came the Abbot Ulsinus.
To him we owe so much,
And of him yet we know so little,
Except we know him by his work and deeds.

A thousand years ago his work began,
See now how Ulsinus first made his plan.

A bell begins to toll. Country folk enter from all directions and gather together. A few soldiers from the nearby military station of Kingsbury join the throng.

A procession of monks and nuns from the Abbey enters. They carry banners and models of three churches, which are carried high. At the end of the procession comes the Abbot Ulsinus. As the procession moves slowly forward they sing a solemn chant.

The procession halts on the high ground, and Ulsinus addresses the people.

ULSINUS: People of Verulam, Kingsbury and St. Albans: pilgrims from near and far come to visit the Abbey Church of St. Alban. They come to worship God, and to pray at the shrine of His servant, the blessed Alban.

The Abbey has brought peace and prosperity to the countryside: a little community has sprung up at its gates, and the faithful who dwell there can come daily to His House to offer thanks to God. But many of you live too far away to follow their example. It seems good therefore that we should build three daughter churches round the Abbey. They shall be situated so that all pilgrims and all wayfarers, and all military men who may be bound for Kingsbury, shall pass a church where they may be purified before they visit the Abbey and the Shrine

One church shall be called Peter: the first of the Apostles.

A second shall be called Stephen: the first of the Martyrs.

The third shall be called Michael: the first of the Archangels.

The models of the three Churches are held before him, each with a monk in attendance.



Go forth in peace, holy fathers. Lay your foundations well, build your churches in stone that they may endure and ever stand as monuments of faith in God and in His holy church. But build you too in the hearts and mind of man, that they may live for ever in His love

Go forth in peace: lift up your hearts on high.

Three little processions make their way to the north, the south and the west.

ULSINUS: The Abbey is your Mother Church. Come often to her, on her festivals and Holy days, and send your sons each day to learn true wisdom. A school shall be set up where they may learn to read and write and many other goodly things. Send them early in the morning, good people.

From each group boys run to Ulsinus and gather round a lay brother.

ULSINUS: Some of you will have goods to sell, and there are things you will need to buy, so around the Abbey gates I will set up a market where all may freely come to buy and sell. Pilgrims and men on the king's business, wayfarers and many other folk will pass this way.



Bobby looks forward to his OXO
in his very own cup — and no
wonder! That comforting beefy
beverage is everybody's favourite.



My! **OXO!**

From the three groups lines of moving people—going and coming—stretch out to the people gathered around Ulsinus.

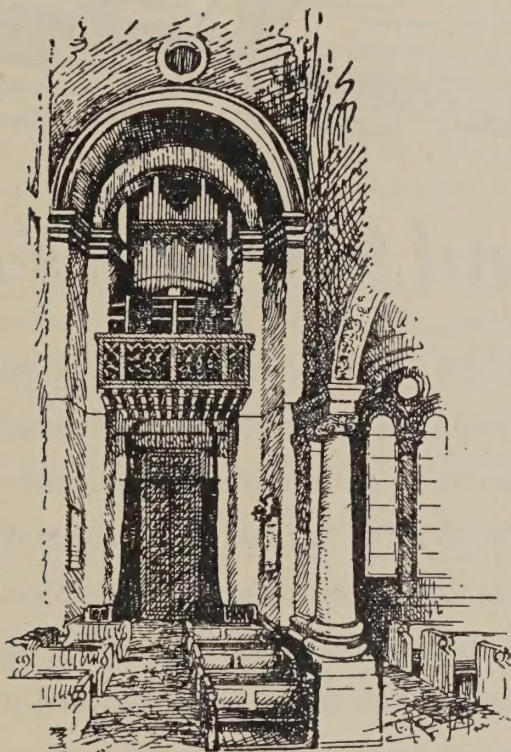
In the years to come, when the country is at peace, and warring factions are no longer in our midst, the little villages around the churches will grow, until a time may come when they are joined, each with the other, and with the market around the Abbey gates, and there is one big township.

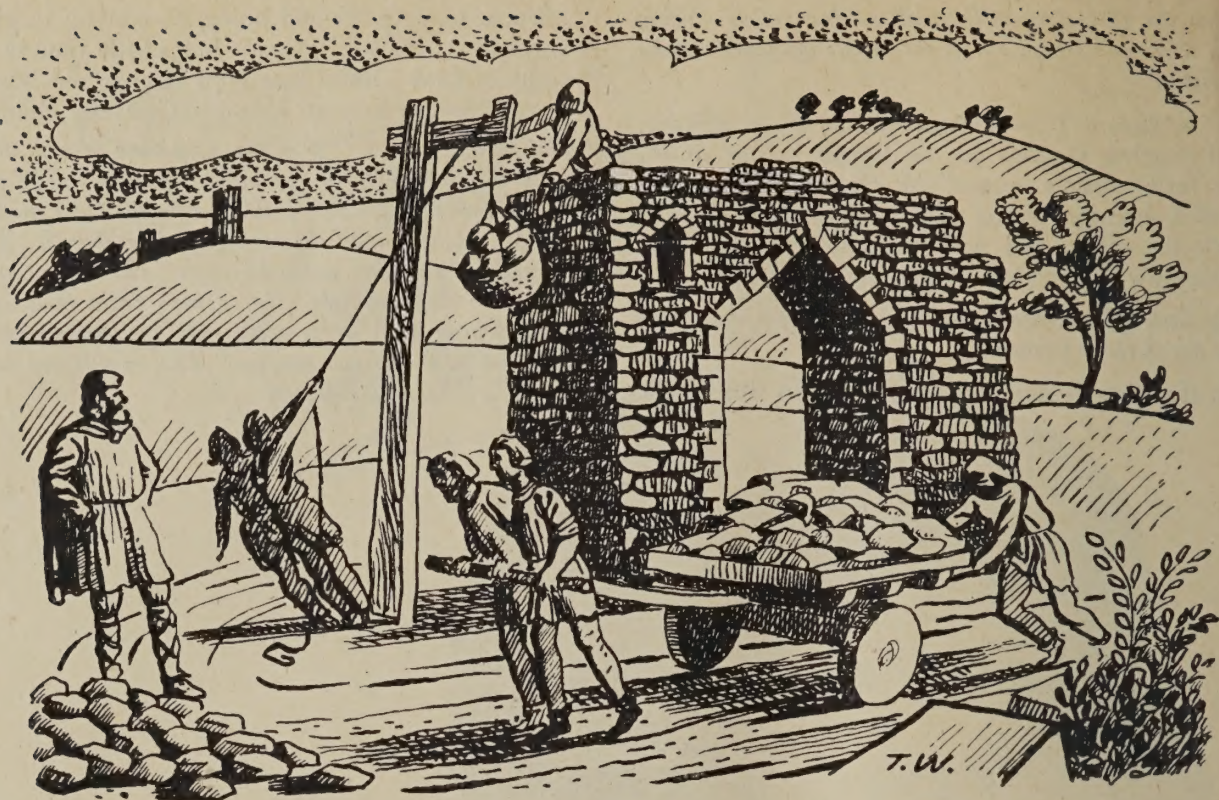
The little groups are linked with lines of people until one big circle is formed.

But that time is not yet. Be content to seek God's

purpose in your life and home, be content to grow slowly. A thousand years is but a little time in the sight of God. Build first your church and homes, grow steadfast in your love for God, my children.

Bells begin to toll: first the deep tone of the Abbey bell, then the bells of the other churches. The boys return home from school, and the people from market, and all gather round the model of their church. They kneel as the models are held aloft. The Abbey group begins to sing, and the other groups begin their song. The crowds drift away until only the models of the churches and Ulsinus remain. The models are borne away, and Ulsinus departs.





and 900 years later...

It might be said that St. Albans had to wait 900 years before it could enjoy the services of the Westminster Bank, for the year which sees the millennium of its foundation sees also the one-hundredth anniversary of the Bank's connection with the City. On September 3, 1848, the London & County Banking Company (which later became the Westminster Bank) opened a branch office in St. Albans and thus began an association which has lasted without interruption for a century. The Westminster Bank today looks forward to a long continuation of the friendly relations which have always existed between its customers in St. Albans and those who provide the Bank's services at its St. Peter's Street branch.

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Episode 4

HOLY DAY, A.D. 1440

CHORUS

The work began by Ulsinus went well.
The Abbey Church, rebuilt by Paul de Caen of Normandy,
Became the most important in the land.
The School had many scholars.
Kings, queens and noblemen were constant visitors.
The town increased in size,
And on all festivals and holy days,
The great ones of the land assembled with the townsfolk
To honour God and all his saints,
And in particular the Blessed Alban.

One holy day of splendour and of fame
Was when the saintly young King Henry came.
The King, the court, the townsfolk all combine
To make a pilgrimage to Alban's shrine.

To the sounds of gay music long streams of dancers come swirling into the arena.

While they dance booths are set up—gaily coloured stalls with streamers flying. They sell sweetmeats and toys, drinks and trinkets, souvenirs for pilgrims. Townspeople enter; country people from the villages around the three churches, pilgrims and soldiers join the throng. A procession of nuns from Sopwell passes on its way to the Abbey. A strong man takes on all comers, a minstrel delights a crowd of spectators, a troupe of tumblers entertains others, a conjurer gathers a crowd around him.

A fanfare sounds and from the south comes the royal party from London, the young King, Henry VI, with courtiers and attendants. The King's uncles, Humphrey, Duke of Gloucester and Cardinal Beaufort, Bishop of Winchester, the Earl of Suffolk, and the Duchess of Gloucester greet the King.

The crowd cheer the King as he rides by on his way to the Abbey. A bell begins to toll and the spectators move into line to watch the procession from the Abbey.

A crowd of lepers enter from St. Julian's, hoping that a miracle may take place as the relics of St. Alban are carried past in the procession. The spectators recoil as the lepers pass, but they are allowed a little area to themselves on the processional route.

To solemn music the procession enters from the Abbey. Priests, monks, nuns, members of the Fraternity of St. Alban, members of the Guilds, are in the procession. They carry banners and pennants. Finally comes the feretory in which are the Saint's relics, borne by four monks under a canopy of gold, followed by the Abbot, John of Wheathampstead, and the royal party.

As the relics pass the spectators fall on their knees, and the lepers prostrate themselves. The procession passes out of sight, and the royal party makes its way to the dais. Humphrey, Duke of Gloucester, presents the Mayor to the King.

GLOUCESTER: Your Highness

The Mayor of St. Albans now presents
The loyal greetings of this ancient town.

The Mayor presents a parchment which the
King accepts.

HENRY: My greetings and my thanks.

St. Albans is a very pleasant town.

I come here often when I can escape

From London and the heavy cares of State.

My mother brought me here when I was young



And many are the happy hours I've passed
Within the Abbey of the blessed Saint.

*There are murmurs at the edge of the crowd, and
a man runs forward crying.*

MAN: A miracle! A miracle!

GLOUCESTER: What means this noise?

Fellow, what dost thou proclaim?

SUFFOLK: Come to the King, and tell him what
miracle.

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KIMPTON, WHEATHAMSTEAD.

MAN : Forsooth, a blind man at St. Albans shrine,
Within this half-hour hath received his sight ;
A man that ne'er saw in his life before.

HENRY : Now, God be praised, that to believing souls,
Gives light in darkness, comfort in despair !

Some townsmen come forward carrying a man on a chair, his wife following.

BEAUFORT : Here come the townsmen in procession,
To present your highness with the man

GLOUCESTER : Stand by, my masters : bring him near
the King :

His highness' pleasure is to talk with him.

HENRY : Good fellow, tell us here the circumstance,
That we for thee may glorify the Lord.

What, hast thou been long blind, and now restored ?

SIMPCOX : Born blind, an't please your Grace.

WIFE : Ay, indeed was he.

SUFFOLK : What woman is this ?

WIFE : His wife, an't like your worship.

GLOUCESTER : Hadst thou been his mother, thou
couldst have better told.

HENRY : Where wert thou born ?

SIMPCOX : At Berwick in the north, an't like your
Grace.

HENRY : Poor soul, God's goodness hath been great
to thee ;

Let never day nor night unhallow'd pass,
But still remember what the Lord hath done.

DUCHESS : Tell me, good fellow, camest thou here
by chance,

Or of devotion, to this holy shrine ?

SIMPCOX : God knows, of pure devotion ; being called
A hundred times and oftener, in my sleep,
By good Saint Alban ; who said, 'Simpcox, come,
Come, offer at my shrine, and I will help thee.'

WIFE : Most true, forsooth ; and many time and oft
Myself have heard a voice to call him so.

BEAUFORT : What, art thou lame ?

SIMPCOX : Ay, God Almighty help me !

SUFFOLK : How camest thou so ?

SIMPCOX : A fall off a tree.

WIFE : A plum tree, master.

GLOUCESTER : How long hast thou been blind ?

SIMPCOX : O, born so, master.

GLOUCESTER : What, and wouldst climb a tree ?

SIMPCOX : But once in all my life, when I was a youth.

WIFE : Too true ; and bought his climbing very dear.

GLOUCESTER : Mass, thou lovedst plums well, that
wouldst venture so.

SIMPCOX : Alas, good master, my wife desired some
damsons,

And made me climb, with danger of my life.

GLOUCESTER : A subtle knave ! but yet it shall not
serve.

Let me see thine eyes : wink now ; now open them :
In my opinion yet thou see'st not well.

SIMPCOX : Yes, master, clear as day, I thank God and
Saint Alban.

GLOUCESTER : Sayst thou so ? What colour is this
cloak of ?

SIMPCOX : Red, master ; red as blood.

GLOUCESTER : Why, that's well said. What colour
is my gown of ?

SIMPCOX : Black, forsooth ; coal-black as jet.

HENRY : Why, then, thou know'st what colour jet
is of ?

SUFFOLK : And yet, I think, jet did he never see.

GLOUCESTER : But cloaks and gowns, before this day,
a many.

WIFE : Never, before this day, in all his life.

GLOUCESTER : Tell me, sirrah, what's my name ?

SIMPCOX : Alas, master, I know not.

GLOUCESTER : What's his name ?

SIMPCOX : I know not.

GLOUCESTER : Nor his ?

SIMPCOX : No indeed, master.

GLOUCESTER : What's thine own name ?

SIMPCOX : Saunder Simpcox, an' if it please you, master.

GLOUCESTER : Then, Saunder, sit there the lyingest
knave in Christendom. If thou hadst been born
blind, thou mightst as well have known all our
names as thus to name the several colours we do
wear. Sight may distinguish of colours ; but
suddenly to nominate them all, it is impossible.
My lords, Saint Alban here, hath done a miracle ;
and would ye not think his cunning to be great
that could restore this cripple to his legs again ?

SIMPCOX : O master, that you could !

GLOUCESTER : My masters of Saint Albans, have you
not beadles in your town, and things called whips ?

MAYOR : Yes, my lord, if it please your Grace.

GLOUCESTER : Then send for one, presently.

MAYOR : Sirrah, go fetch the beadle hither straight.

GLOUCESTER : Now fetch me a stool hither by and by.
Now, sirrah, if you mean to save yourself from
whipping, leap me over this stool and run away.

SIMPCOX : Alas, master, I am not able to stand alone.
You go about to torture me in vain.

GLOUCESTER : Well, sir, we must have you find your
legs. Sirrah beadle, whip him till he leap over that
same stool.

BEADLE : I will, my lord. Come on sirrah ; off with
your doublet quickly.

SIMPCOX : Alas, master, what shall I do ? I am not
able to stand.

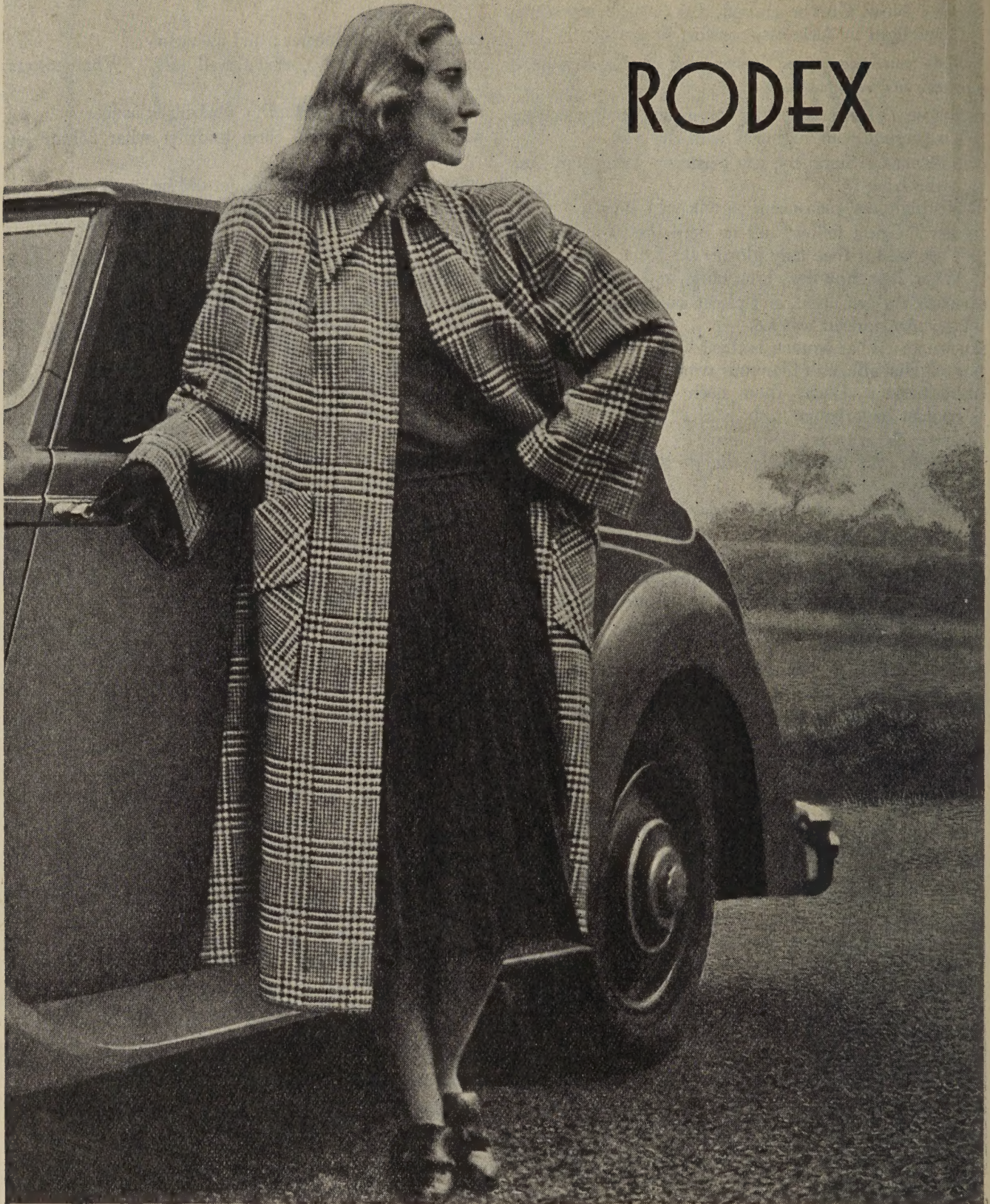
*After the beadle has hit him once, he leaps over the
stool and runs away, the crowd following and crying :*

A miracle ! A miracle !

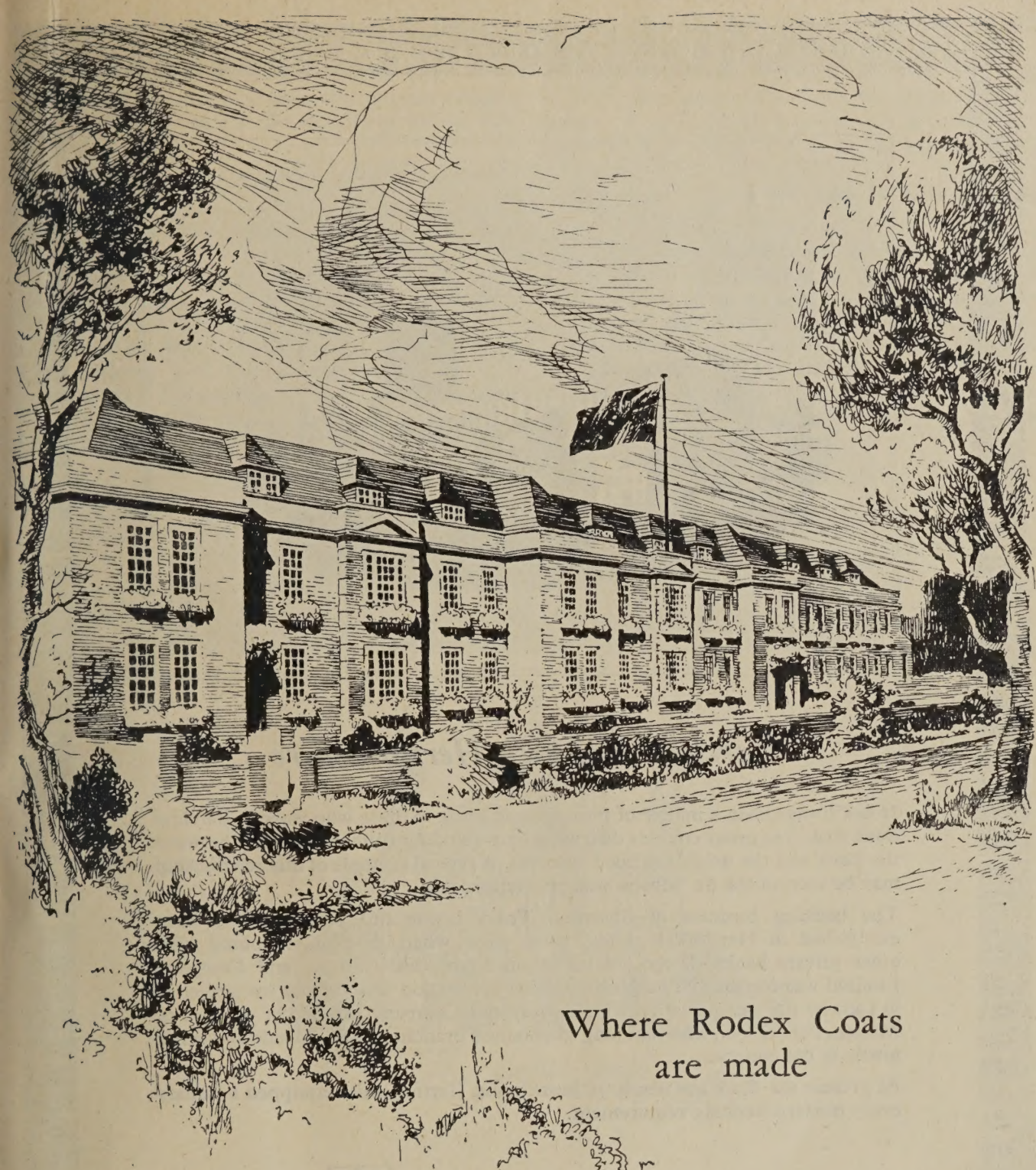
KING : O God, seest Thou this, and bearest so long ?

DUCHESS : It made me laugh to see the villain run.

RODEX

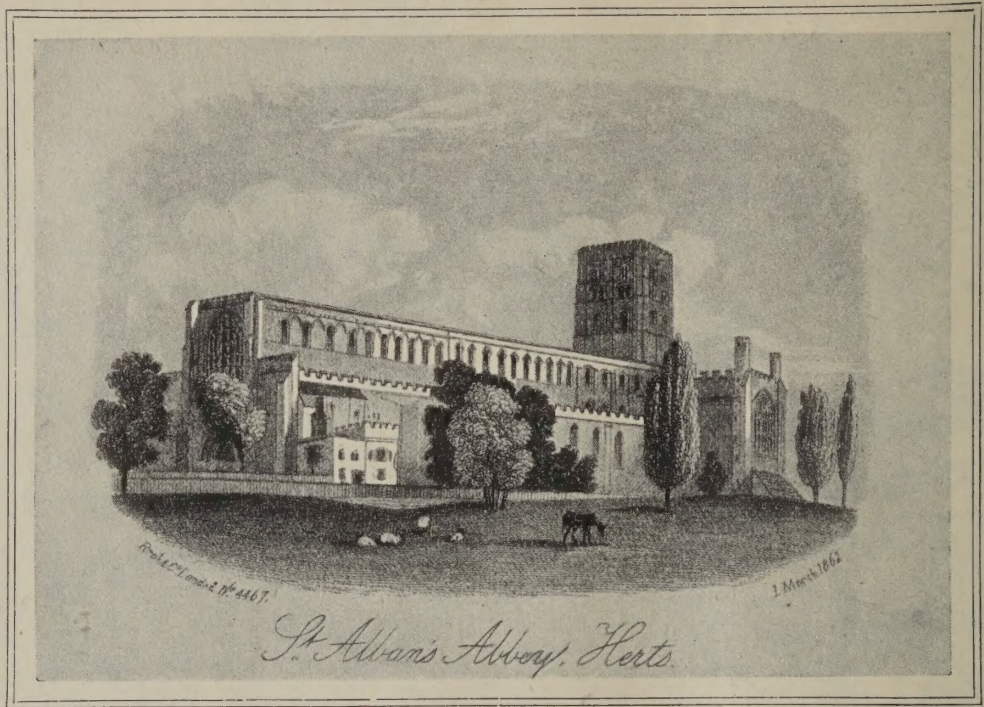


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At present the Bank has nearly 50 branches in Hertfordshire equipped to satisfy every modern banking requirement.

Barclays Bank Limited



GLOUCESTER : Follow the knave ; and take this drab away.

WIFE : Alas, sir, we did it for pure need.

GLOUCESTER : Let them be whipt through every market town till they come to Berwick, from whence they came.

The beadle takes the woman away. The Abbot comes forward.

ABBOT : I ask your highness' pardon for this rude buffoon.

It brings discredit to our holy shrine.

HENRY : Be well assured, of this good Abbot John
Our love for holy Alban, for his shrine
And for his Abbey Church remains secure,
As presently we'll seek to show.

GLOUCESTER : The wording of the charters of this house
Is sometimes too obscure ; and leads alas
To many legal suits and disputations.

HENRY : Good uncle Gloucester, we will presently confirm

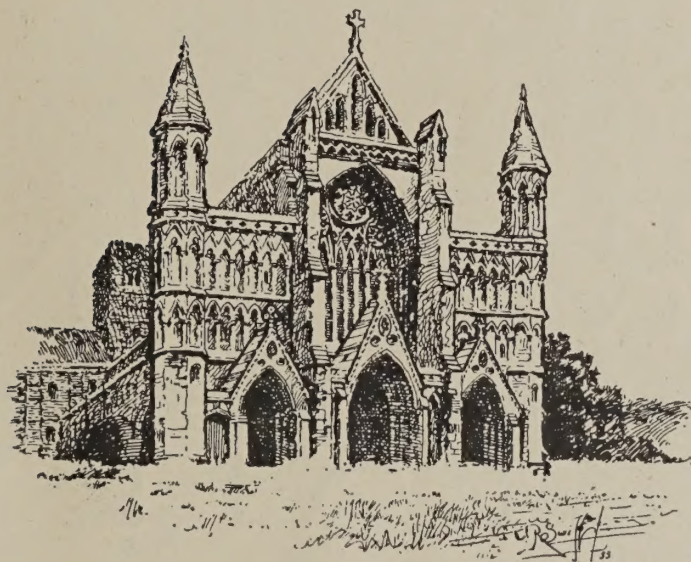
The Abbey's former powers, and more than that,
We'll show good Abbot John our special love.

ABBOT : Your highness' words rejoice my heart.

HENRY : Lord Abbot, lead us to our lodgings, we'll
away,

And leave the good folks here, to have their holy day.

The royal party departs, and the festivities are resumed. The whole company join in the dancing ; all that is except some of the people who are too full of gingerbread, or who have had a surfeit of ale, or who have overburdened themselves with trinkets. As the dancers depart in all directions, stragglers cross the arena : husbands overladen with shopping, lovers lost to all but themselves, small children with kites, the man with the dancing bear.



DAILY MAIL



BRITAIN'S
GREATEST
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Episode 5

QUEEN ELIZABETH VISITS GORHAMBURY, A.D. 1572

The Chorus accompanied by attendants enters the arena.

CHORUS

The good Duke Humphrey fell from royal favour ;
The King was weak and Richard, Duke of York,
Here in this town,
Fought bloody battles in the streets
Against the King.
The warring troops came forth to fight
For York or Lancaster ;
The Abbey Church and Sopwell were despoiled and robbed,
The people of the town were much afraid.

But through the wars and torments of the time,
Our life went on.
The School continued with its daily work,
The villages around the churches,
The little town around the market place
Were growing year by year.
But dark and threatening clouds
Drew near the Abbey Church.

Then came the day when Abbot, monks and all who lived therein,
Went forth for ever from the Abbey walls.
The lesser buildings were destroyed,
But the Church, the noble Church you see on yonder hill
Remained.
And for four hundred pounds
The people of St. Albans purchased it.

A new life for St. Albans had begun.
The Churches, School and Market still went on.
The years pass by : the country is at peace :
Elizabeth is Queen.

Let music sound, let drums beat out, let trumpets play
Our Queen, Elizabeth, is coming here to-day.

The music sounds, and the Chorus with his attendants departs.

A body of yeomen bearing pikes marches on to the arena. A few latecomers arrive from all directions, with their women folk and children in attendance. A dais with tapestries is set up. Countryfolk and townspeople arrive and watch the preparations with great interest.

The Mayor (Robert Woolley), enters with the Town Clerk, the Senior Aldermen and Principal Burgesses, three Vicars, the Rector of the Abbey Church, and the Archdeacon of St. Albans. The High Steward and Recorder, Nicholas Kempe, and the two M.P.s, Henry Cock and Charles Smithe, also arrive at this time. The boys of the School arrive, with the Headmaster, John



Thomas Hylocomius, and take up a prominent position.

The excitement and interest of the crowd increases as the visitors arrive; a few people faint and are carried away to the outskirts of the crowd.

Sir Nicholas Bacon arrives from Gorhambury, with Lady Anne and their two sons, Anthony and Francis. The Mayor hastens to greet them.



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MAYOR: All is prepared, Sir Nicholas. The townsfolk and the countryfolk from miles around, are gathered here to honour and to welcome England's Queen. My speech is well rehearsed, and if Her Majesty permits the Vicars of the ancient churches, the Steward, and our good Headmaster, John Hylocomius, are all prepared with speeches too, if time permits.

SIR NICHOLAS: Good Mr. Mayor, I pray you keep the speeches short. Her Majesty may well be weary from her journey here. Her royal temper may perhaps be soothed with cordial and entertainment.

MAYOR: We have prepared for that, Sir Nicholas, as you directed.

FRANCIS: Look! father, look! The Queen approaches.

Young Francis points to the far end of the arena. A fanfare sounds and the Queen enters with a gay assembly of lords and ladies, some mounted and some on foot.

A man cries out God Bless the Queen! The people take up the cry and surge forward, and the pikemen struggle hard to keep them back.

Sir Nicholas advances slowly to greet the Queen, and escorts her to the dais. After various presentations have been made the Mayor beckons a lad who steps forward and offers the Queen a cup of wine. The Queen seems well pleased, and all relax.

The Mayor and others advance and bow low. The Mayor, speech in hand, prepares to read his long oration.

MAYOR: REGINAE ELISAE SALUTATIO.

Tu, quam reginam nunc magna Britannia passim
Atque etiam unanima vel Hibernia voce salutant,
Tu, cui nomen Elisa datur, quo clarius audet
Inter majores aliud praedicere nemo,
Accipe nunc haec verba . . .

THE QUEEN: It is a fine and well constructed speech, but one that I must study well. I pray you, Mr. Mayor, to hand the speech to my Lord Keeper here. We'll read it when we get to Gorhambury.

The Mayor hands the speech to Sir Nicholas.

MAYOR: The speech was written by our master at the School, John Thomas Hylocomius.

THE QUEEN: Sir Nicholas has told me often of the School, and of the worthy John, and to good purpose, as you presently shall hear.

The Queen beckons to Sir Nicholas, who then speaks.

SIR NICHOLAS: Her Majesty doth give for the relief of the School here at St. Albans, the benefits of two Wine licences. All profits rising from the sale

of these said licences shall go forthwith to the said School for ever.

Loud cheers.

This privilege Her Majesty has shown to us is shared alone by Cambridge and by Oxford Universities.

And with Her Majesty's permission I announce new regulations for the School. Henceforth the hours of work shall be in winter months from seven in the morning until five hours after noon, with two hours break for dinner.

Loud groans.

In summertime school shall commence at six o'clock, but on each Saturday and holiday the school will close at three.

More groans.

The other regulations you will later hear from Schoolmaster Hylocomius.

Quae Divae Mariae jam pridem nomine dicta est,
Literulis celebrem fecit Elisa domum.

Quid vetat ingenuas pietati jungier artes?

Hinc illinc verae est religionis honos.

MAYOR: We have prepared some little entertainment for Your Majesty, and beg permission for the music now to play.

The Queen assents; the music sounds and a team of Morris Men dance before her.

The children of the town then perform a dance in stately fashion.

The Queen rises and addresses the people.

THE QUEEN: Good people of St. Albans Town,
I thank you for your welcome.

Your loyalty and love are very dear to me.

My royal father and my mother knew your town full well,

My girlhood days were spent not many miles from here.

Thus I have many links with you,

And memories, some sad, some gay:

My thoughts dwell often on your countryside.

If time should ever come, as well it may,

When I have need of help,

I'll straightway send for help from men of Herts.

Good people, let your sons make merry here to-day,

I must to Gorhambury, without delay.

Make this a day of jolliment and fun,

There'll be less time when work at School's begun.

The Queen departs on her way to Gorhambury. The people cheer her as she goes, the boys throwing their hats high in the air, and they dance merrily away.

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Episode 6

KING CHARLES I VISITS ST. ALBANS SCHOOL, A.D. 1626

CHORUS

Some sixty years have passed.
King Charles I is now upon the throne.
The history of St. Albans School records
That in the second year of his reign
He paid a visit to the School.
See now, the ancient School prepares to greet the King :

His Majesty King Charles is riding by,
Vivat, Vivat Carolus Rex! the scholars cry.

The two ushers and the head boys enter and as they reach the centre of the arena, boys come running from all directions—from St. Michael's, St. Peter's, St. Stephen's and the town.

The ushers, with the assistance of the head boys, direct the boys to line the royal approach. Other boys lay down a drugget, on which are placed chairs for the royal party. More boys hurry on with costumes and properties for the mime. In a short time all is ready.

A party of horsemen rides alongside the lake, and turning enters the arena, moving slowly through the ranks of boys. Behind the horsemen come a party of ladies.

The Headmaster bows low. The King dismounts and takes his seat, the courtiers and ladies grouped behind him.

George Villiers, Duke of Buckingham, who accompanies the King, presents the Headmaster.

BUCKINGHAM: Your Majesty, the Headmaster of the School, Mr. John Harmar.

The Headmaster bows low, and in turn presents the two ushers.

HEADMASTER: The ushers of the School, Your Majesty, Mr. Downes and Mr. Richard Goddard.

The two ushers bow low and retire to the side. The three head boys come forward.

HEADMASTER: Your Majesty, I beg leave to present to you the three head boys of the School: Thomas Baily, Robert Rowbotham, and Richard Manly.

The three boys make their bow and retire.

HEADMASTER: Your Majesty, we are most honoured by your presence here to-day. This ancient School has in the past had many favours shown to it by princes of the land, but no more signal honour could be bestowed upon us than this visit in your royal person. With Your Majesty's permission I'll call upon the head boys of the School, to offer to Your Majesty our greetings and allegiance.

He beckons the boys forward, and in turn they make short speeches in Latin.

THE KING: Mr. Headmaster and scholars of this ancient School, I thank you for your loyal welcome and for the excellent speeches to which I have listened. I hope the School will have success in all its undertakings, and while I

hope time will be found for tennis and for other sports, I hope the gentler arts, that give me so much pleasure—music and painting—will not be forgotten. The motto of your School—*Medfiocria firma*—is a cautious one. Remember that it is also the motto of the Bacon family, of Nicholas and Francis, and it will be an inspiration to you to attain the heights that they achieved, and all will be well.

There is great applause.

HEADMASTER: Now, with Your Majesty's permission, we'll present a History of the School in Mime, which has been written by the Scholars in the Upper Form. While the boys prepare for their play, I venture to ask if the ladies would delight us with a dance.

The King assents. The ladies come forward and dance, and the boys prepare for their play.

The Chronicler appears in a large cloak, and with a long scroll in his hand, and bows before the King. After each set of couplets actors appear and mime the action.

CHRONICLER: In the year nine hundred and forty-eight

A School was set up at the Abbey Gate.
Boys came from far, they came from near,
Some came willingly, some, I fear,
Had to be coaxed, or goaded or led,
To hear the lessons the master said.





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Latin they learned to write and read,
And how to be good in word and deed.

There was once a boy who came to the School
Who wished to follow the monastic rule,
But the Abbot declining, the boy left his home,
And in years to come became Pope in Rome.
Nicholas Breakespeare from Langley became,
Pope Adrian IV, a man of great fame.

Centuries pass, the School expands and
Soon is the largest in all the land.
In eleven hundred and ninety five,
Nequam records the School did thrive.
Much time was spent in games and in sport,
Mens sana in corpore sano, they taught.

Mathew Paris was a boy at the School,
He achieved great fame 'neath the Abbot's rule,
To chronicle our history was his aim,
And for this purpose kings and others came.
They told him all they knew and hoped that he
Would write about them in his history.

In June of thirteen hundred and ten,
The Lord Abbot Hugh of Eversden,
Granted a charter which gave to the School,
Special privilege and a most exact rule.
The boys were forbidden to fight in the town,
To strike any master or knock a boy down.
No arms must be carried excepting perchance,
When lawfully needed for work or for dance.

Boys enter and solemnly perform a sword dance.

CHRONICLER : At St. Alban's School the Schoolmaster
Printer

Set up his press and worked summer and winter,
Printing the books that have brought us much fame,
But alas ! and alack ! we know not his name.
John Insomuch, Printer, we call him to-day,
His was the third press in England, they say.

At the Reformation the School remained,
And in the Lady Chapel a new home gained.
Sir Nicholas Bacon devised new rules,
That soon were the envy of other schools.

The Queen bestowed a unique royal charter,
And praised the School of Alban the Martyr.
Royal charters from Edward and Mary the Queen,
And from James the First complete the scene.
With pride we show them to you now,
Before we make our final bow.

Your Majesty, we humbly offer greeting,
We hope you have enjoyed our little play,
We tender you our loyalty and devotion,
And hope you'll visit us another day.

The scholars bow very low before the King.

CHRONICLER : Each day at School, a prayer we say,
To guide and help us on our way,
Each day this prayer we say in turn,
So that each boy its precepts learn.

The smallest boy begins to say the prayer.

BOY : We give Thee humble and hearty thanks, O
most merciful Father, for our founders, masters,
and all other benefactors, through whose bountiful
care we have derived Thy blessings of religious
education and most useful learning ; and we beseech
Thee to give us Thy grace, that we may use all
these Thy blessings to the glory of Thy name ;
that we may become profitable members of Thy
Church and Commonwealth. . . .

*The boy falters and the prayer is taken up by the Head
boy.*

HEAD BOY : . . . and at last he made partakers of Thy
immortal glory, through the resurrection to eternal
life of Jesus Christ our Lord, Amen.

The boys raise their heads, and the King speaks.

THE KING : Boys of St. Albans, I thank you, I thank
you from my heart. I have been most moved and
interested in your play, and amused too. The
Headmaster has most kindly agreed to my request
that to celebrate to-day you shall all have a special
holiday.

*The cheers ring out, and the King rides away, through
crowds of boys, who run alongside until he passes out
of sight, crying : Vivat ! Vivat ! Carolus Rex !
Vivat ! Vivat ! Carolus Rex !*



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Episode 7

THE CIVIL WAR, 16th JANUARY, 1643

CHORUS

King Charles rode forth
The cries still echoing in his ears.
He came again in times of war
When some fought for the King,
And some for Parliament.
St. Albans, for the most part,
Was against the King.
But some of Charles' supporters,
With the Sheriff at their head,
Rode in one day
To make a royal proclamation.

To the Market Cross the royal procession
makes its way,
They little know that Cromwell will be
here to-day.

Townsfolk enter from all directions and talk gravely of the news—the disturbed state of the country, the tidings of battles and skirmishes between the King and Commonwealth. Some side with one party, some with the other. There is much argument, shaking of fists and nodding of heads.

Many folk have come to market. Yeomen's wives and daughters have butter, cheese and eggs for sale, travelling salesmen spread their merchandise to attract customers, crying What d'ye lack? and a hawker of tracts moves around doing good business.

Prominent citizens enter, including the Mayor, Robert Ivory; the Vicars of St. Peter's, St. Michael's and St. Stephen's, all of whom are for the King, and John Rowbotham, Alban Cox and Roger Pemberton who are for Parliament.

Suddenly the sound of drums is heard. All business ceases—the market folk hurriedly pack up their wares and conversation is stilled as an imposing cavalcade rides in. At the head are a number of attendants and local gentry who support the royal cause, and the High Sheriff of Hertfordshire, Sir Thomas Coningsby of North Myrms.

The procession halts at the Market Cross. Coningsby dismounts, and a crowd gathers round. The Puritans stand aloof.

SHERIFF: Neighbours and friends, many of you know me well as one of the magistrates of this town. To-day, I speak not as a magistrate, but as High Sheriff of Hertfordshire, to which high office H.M. King Charles appointed me last year.

There is great need in these unhappy times for an adequate force of men to protect the lives and property of peaceful citizens. As High Sheriff I am called upon to raise trainbands of men, a task I shall depute to Viscount Cranborne, Lord Lieutenant of this County. I know the menfolk of this ancient town will answer this royal call. The herald will now read His Majesty's Commission of Array.

The drums roll. A herald comes forward, and begins to read.



HERALD: A Proclamation of His Majesties Grace, Favour and Pardon to the Inhabitants of this County of Hertford, Given at Our Court at Oxford, the 7th January in the Eighteenth yeare of Our Reigne. Whereas We have taken notice that by

the malice, industry and importunity of several ill-affected and seditious Persons in our County of Hertford, very many of our weake and seduced subjects in that Our County have not only been drawne to exercise the *Militia*, under colour of a pretended Ordinance, without and against our consent (a crime of a very high nature, if We would strictly enquire thereinto), but have made contributions of Plate, Money and Horses, towards the maintenance of the Army now in Rebellion against

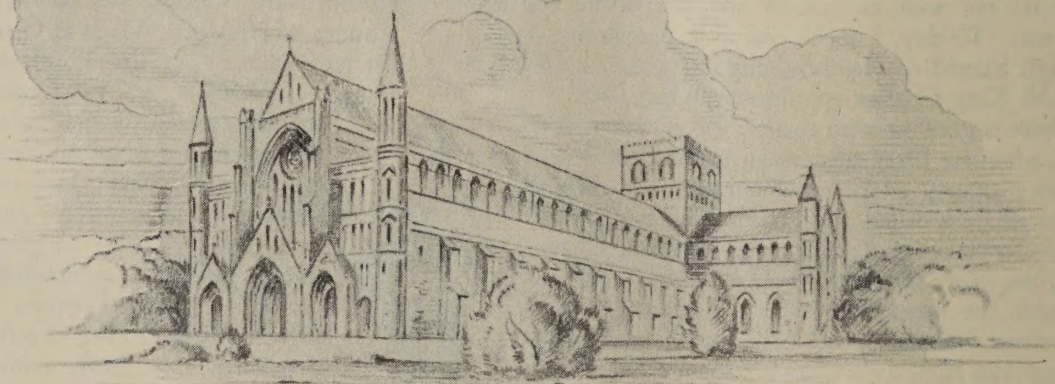


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Us; we doe hereby publish and declare, that We are graciously pleased to attribute the crimes and offences of our said subjects of that county to the power and faction of their Seducers; who, We believe . . .

While the proclamation is being read, the Puritans grow restless. Suddenly loud cries are heard, and a band of six Parliamentary troopers rides in, with Captain Oliver Cromwell at its head. Cromwell dashes into the crowd with his men, and attempts to seize the Proclamation and the Sheriff. The Sheriff's supporters intervene and Cromwell is beaten off. The crowd run hither and thither to see what is going on, but most of them hesitate to take an active part in the fray. The Sheriff somewhat dishevelled, addresses the crowd.

SHERIFF: I am the lawful Sheriff of this County, and I call upon you all to witness this unseemly and illegal attack upon His Majesty's representative.

Loud cheers and counter-cheers.

The Herald continues to read the Proclamation.

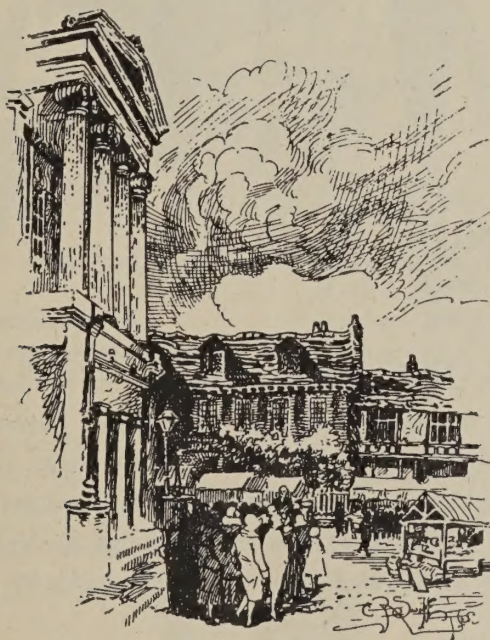
HERALD: . . . and we do therefore hereby offer Our free and gracious pardon to all the Inhabitants of Our said County of Hertford, for all offences concerning the Premises committed against us,

before the publishing of this Our Proclamation, except such persons only as are already in prison for any of those offences.

Provided that this Our Grace shall not extend to any Person who after publishing this Our Proclamation shall presume by Loane or Contribution, to assist the said Army of Rebels, to assemble and muster themselves in Armes without authority derived from Us under our Hand. . . .

Loud cries break out again: Cromwell rides in again with more soldiers, and there is much scuffling and fighting in which the townspeople take sides. Mothers run with their children for safety, men too old to fight shout encouragement, the market salesmen try to protect their goods.

The Sheriff is finally overcome, and the proclamation is torn down from the Market Cross. The cry is raised To The Red Lion, and Cromwell and his men with their captives depart to deposit them in the inn. The vicars and other royalist supporters escape, some pursued by Parliamentary supporters. The greater part of the crowd follow Cromwell to the Red Lion. A few tradespeople remain, and resume their cry of What d'ye lack! but finding no response depart disconsolately.



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Episode 8

WHIGS VERSUS TORIES, AN ELECTION SCENE, A.D. 1722

CHORUS

King Charles was soon to die.
Did he, I wonder, know the words
That Shirley, one time Master of the School, inscribed :
The glories of our blood and state
Are shadows, not substantial things ;
There is no armour against Fate :
Death lays his icy hands on kings :
Sceptre and Crown
Must tumble down,
And in the dust be equal made
With the poor crookèd scythe and spade.
The years pass quickly by :
The monarchy is once again established in the land,
And in St. Albans life goes quietly on.
The bells ring out from time to time
To celebrate the country's victories
In far off lands.
They ring with special joy
For all the many battles won by John, the Duke
of Marlborough,
For Marlborough lived here in the town,
His Duchess took an active part in our affairs,
And at election times, this quiet country town,
Became a battlefield for Whigs and Tories,
With the Duchess Sarah, leading either side with
equal determination.
One man, one vote, is the order of the day,
But bribery and corruption oust fair play.

A number of men carrying banners over their shoulders hurry across the arena. A few travellers stop them to ask the way :

TRAVELLER : Tell me, my man, which is the way to the Town Clerk's house ?

MAN : The Town Clerk's house ? Are you here on election business ?

TRAVELLER : Possibly, my man, possibly.

MAN : Are you for the Whigs or for the Tories ?
No matter, you are not a freeman of the town, your vote won't count.

TRAVELLER : It is a matter of some urgency. Tell me, if you will, where the Clerk's house is.

MAN : Here comes the Clerk, he'll tell you.

They go off. The Town Clerk approaches.

TOWN CLERK : Have you been sent for by the Mayor ?

TRAVELLER : We have.

TOWN CLERK : Then come this way : time is short. The election takes place to-day : we must make you citizens without delay.

They depart and a procession enters headed by a man with a big drum and followed by

the two Whig candidates, Viscount Grimston and Joshua Lomax, and a crowd of supporters. They gather in front of the Whig platform.

A much smaller procession enters, headed by a man with a trumpet and followed by the Tory candidates, William Clayton and William Gore, with only a handful of supporters. This procession makes for the Tory platform. The Mayor, William Carr, accompanied by the Town Clerk and a servant, enter and are greeted by the Whig candidates.

MAYOR : Good day, my lord, and Mr. Lomax, sir. A fine day for the election.

GRIMSTON : Good morning, Mr. Mayor, a fine day indeed ! We trust the proceedings will be carried out in a fair and seemly manner.

MAYOR : Yes, yes, indeed.

GRIMSTON : You have, I understand, announced in public that no consideration shall influence your conduct to act an unfair or illegal part.



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MAYOR: I have indeed. The electors of St. Albans know you well, you deal much in the town, and there is great affection for you. The other candidates are strangers here.

LOMAX: If what you say is true, then all is well. You'd do well in the House of Commons, Mr. Mayor, your speeches sound so honest and so true. But rumour has it . . .

MAYOR: Distrust all rumour, Mr. Lomax, sir. All will go well for you, I hope.

GRIMSTON: Here comes a great and noble lady, I have no wish to meet her now.

They depart. Free beer is being handed round to all their supporters.

The two Tory candidates come forward. The Duchess of Marlborough drives in and her carriage pauses by the Mayor.

DUCHESS: Good morning, Mr. Mayor. I trust you have the voters well in hand.

MAYOR: Your Grace, it is not easy, as no doubt you understand. The Grimston party are well liked, their meetings quite outshine the Tory gatherings.

DUCHESS: No matter, Mr. Mayor. Have you made new voters, as I asked? The Tories must succeed to-day.

CLAYTON: Near two hundred freemen have been sworn, and more arrived this morning.

MAYOR: I am uneasy in this matter. I am advised it is illegal to introduce new voters thus.

DUCHESS: In politics, all means are fair. I know that to my cost. To make this matter certain, Mr. Mayor, go out and pay the Whig supporters to transfer their votes to Mr. Clayton here, and Mr. Gore. Spare no expense. I go to meet the Duke: when I return, I'll come to greet the two new Tory members.

The Duchess hands the Mayor a large bag of gold. The Tory candidates hand smaller bags to him also, and depart to join their handful of supporters. The Mayor is perplexed. He hands the money to the Town Clerk and returns to the Polling Booth which has been set up. The Town Clerk and his servant entice Whig supporters with gifts of money. Some collect their bribe at a booth nearby before joining the Tory crowd. More people enter, some with staves, crying

Down with the Rumps, Down with the Roundheads, No King George's Justices! etc. The trumpet and the drum both sound together, and cries from both parties intermingle.

A bell tolls. The shouting subsides, and all voters go to register their votes. The crowds stand in small groups, waiting for the result. The bell rings again, and the Mayor with the Town Clerk comes forward. On either side of him stand the rival candidates.

MAYOR: Burgesses and citizens of St. Albans. The election held to-day for two members of Parliament has resulted in a clear majority for Mr. William Clayton and Mr. William Gore. The figures are. . . .

But the figures are drowned in an uproar. Viscount Grimston and Mr. Lomax attempt to address the crowd. His supporters shout The poll is false, Illegal, Corruption, etc., and the Tories cry in opposition. Grimston addresses his supporters.

GRIMSTON: Burgesses and freemen of St. Albans, the election held to-day is illegal. . . .

Mr. Gape, jnr., causes the band to play. A riot breaks out and free fighting begins. The Mayor is escaping as best he may, when a trumpet sounds and a carriage bearing the Duke of Marlborough and his Duchess enters. The shouting ceases, and the Duke is cheered as he drives by on his way to Holywell. He is an old and feeble man now. Cries of God bless the Duke, and Marlborough, Marlborough! follow him on his way.

There is a lull as he goes, but the riot breaks out again, cries of Where's the Mayor and Out with the foreigners conflicting with Down with the Rumps, Down with the Roundheads and Throw them in the river, Throw them in the river. Everyone takes up this cry, and the crowd surges down to the river. Bodies are flung high into the river. Boats are put out and angry cries follow them as Mr. Gore and Mr. Clayton and the Mayor are rowed away.

The scene is deserted except for the man with the drum and the man with the trumpet. They meet and shake hands and go away together. The man with the trumpet carries the drum, and the drummer takes the trumpet.



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Episode 9

ST. ALBANS IS A CITY, A.D. 1877

CHORUS

The coaches passing through the town,
To London, to Holyhead and to the north,
Give way to railway trains,
And industry, exploiting young and old alike,
Begins to thrive.
The population grows apace.
The little villages are now submerged within the town,
The Market still goes on ;
The School declines,
The Churches are decayed,
St. Albans town, it seems, has lost its pride.
Then comes a new awakening ;

St. Albans lifts its head on high,
'St. Albans is a City !' is the cry.

The Town Crier enters, ringing his bell. He pauses in the centre of the arena, and cries :

TOWN CRIER : Oyez ! Oyez ! I come to give notice.
All citizens and freemen of the town of St. Albans :
are hereby warned to assemble at three of the clock
at the Town Hall—three of the clock at the Town
Hall, to hear an important announcement by the
Mayor of this town. Oyez ! Oyez !

*As he speaks people, representatives of the town,
the School and the three churches come forward and
beckon others. The Town Crier continues to ring his
bell.*

*A procession from the Abbey enters : clergy, including
the Rector (the Rev. W. J. Lawrance) and the Bishop
of St. Albans (the Rt. Rev. Thomas Legh Claughton),
the Mayor (William Cannon Smith), Town Clerk,
Mace Bearer, Aldermen and Councillors.*

MAYOR : Citizens and freemen of St. Albans, on
this memorable day, a day important in the history
of our ancient borough, we welcome with pride
and satisfaction, the Rector of the Abbey, the
Reverend Walter John Lawrance ; the vicars of
the three ancient churches of St. Michael's, St.
Peter's and St. Stephen's, the Headmaster of the
School and—and the Rt. Rev. Thomas Legh
Claughton, the first Bishop of St. Albans.
Ladies and gentlemen, his Lordship the Bishop.
The Bishop steps forward to great applause.

THE BISHOP : Mr. Mayor, my lords, Aldermen
and Councillors, ladies and gentlemen. The
Mayor has said that to-day is a memorable day
in the history of St. Albans. It is indeed. We
have been waiting for this day for many years.
In this, the 19th century, St. Albans has gained



new life. The town has begun to grow ; a new
spirit is abroad, plans have been made to restore the
noble Abbey to its former glory. The restoration is
in hand. There is much to be done, but from to-day
our Abbey here is a Cathedral Church and the
Mother Church of the new Diocese of St. Albans.
It is a memorable day for us all, and I am proud to
be your first Bishop.

Loud applause greets the Bishop's speech.

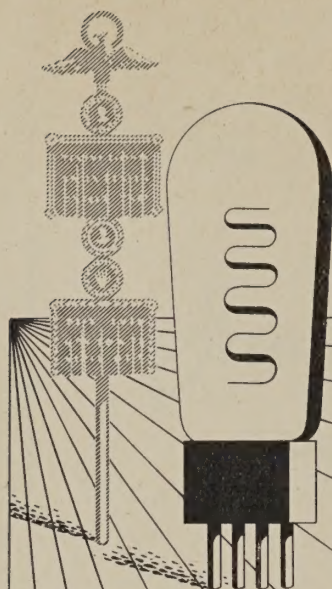
MAYOR : And now, my lords, ladies and gentlemen,
I have a special announcement to make. Consequent
upon the institution of the Bishopric of St. Albans,
H.M. the Queen has agreed to create St. Albans a
City forthwith.

Loud prolonged applause.

A cheque for £90 3s. 6d. has been sent to the Home
Department, and Mr. Rowden, the Deputy Town
Clerk, went to London this morning to collect the
Letters Patent. He should be here at any moment,
if the railway train upon which he is travelling
arrives punctually at the London and North Western
Railway Station.

*Loud laughter, and the cry goes up : Here he
comes. A black-coated figure in top-hat hurries
on with a neat leather case. He hands the case
to the Town Clerk, who opens it and hands the
Letters Patent to the Mayor.*

MAYOR (reading from the document) : Victoria, by
the Grace of God of the United Kingdom of
Great Britain and Ireland, Queen, Defender
of the Faith, to all to whom these presents



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HERTFORD—WELWYN GARDEN CITY

shall come greeting. . . . Know ye that we of Our special grace and favour, and now motion, do by this Our Royal Charter will, ordain, constitute, declare and appoint that Our said Borough of St. Albans shall henceforth for the future and for ever hereafter be a City and shall be called and styled the City of St. Albans. . . . My lords, ladies and gentlemen, St. Albans is a City.

The cry goes up St. Albans is a City. There is much cheering and mutual congratulation. The schoolboys throw their mortar-boards in the air, and an air of festivity sets in. The band strike up. Ladies display

the athletic vigour of the age, and the people dance. Cricketers enter and begin to play. Men bearing large banners enter. The banners announce "Free Refreshments." The crowd begin to melt away, until only the cricketers remain. Then the band see the notice and they creep away until only the man with the big drum remains. The cricketers trickle off—the bowler begins to bowl but runs straight on in the direction of the refreshment tent, and without reluctance the rest follow him. The man with the big drum is surprised to find that he is playing to himself, and then he too goes.



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Epilogue

The Chorus enters with his attendants.

CHORUS

A thousand years have passed since Ulsinus began his work ;
A thousand years of growth, uncertain and unplanned ;
A thousand years in which the fire of life has burned,
Sometimes a gentle flame, but oftentimes a blazing torch.

The city here to-day, still lives and grows,
The spirit that our fathers had remains,
And will remain if we are conscious of our heritage and treasure it,
Lift up your hearts on high !

Remember, if you will, your ancient past,
Remember all those men, and women too,
Who three times in this century
Have left their homes to fight,
And three times have returned
To build their homes and lives anew
Here in their native town.
And be reminded, that our youth to-day,
Will be the guardians of our heritage to-morrow.

Let past, and present, and the future
Join in one glad song of joy and hope.
Lift up your hearts on high !

The trumpets sound, and into the arena come the performers in all the episodes of the Pageant. They group themselves around the Chorus and central figures.

CHORUS

Thanks be to God for Alban the Martyr, and Ulsinus the Abbot, for all founders of our City, through whom in Church and School and Market we walk together as friends ; the Lord give us grace to adorn our heritage ; the Lord strengthen us by love to serve one another ; the Lord make us of one mind here that hereafter we may attain to the City which hath foundations, whose builder and maker is God.

The music sounds again, the performers come forward, and with one voice join in singing the Pageant hymn

Lift up your hearts on high,
Sing and rejoice ;
Lift up your hearts on high,
Sing with one voice.
Sing of our ancient town,
Tell of her glory,
Tell of her sorrows, too,
Tell all her story.

Saint Albans—Saint Albans,
We honour thee to-day.
Saint Alban—Saint Alban,
We follow in thy way.
Bless our endeavours, Lord,
To thee we pray
Give us new courage, and
Hope for to-day.

Lift up your hearts on high,
Sing with one voice.
Lift up your hearts on high,
Sing and rejoice.



Modern Beauty demands

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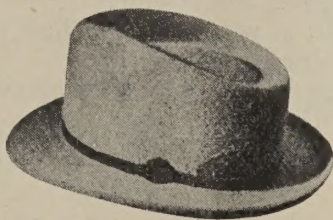
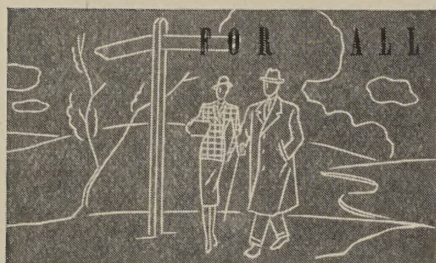
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Historical Notes

The history of St. Albans and the Saxon, Roman and early British towns that preceded it, are so rich in dramatic incident that it is no easy matter to reduce the number of episodes in a Pageant of St. Albans to reasonable proportions. But bearing in mind the special nature of this year's celebration, it has been possible to choose nine episodes, all of which in some way contribute to the general theme of the Pageant, which seeks to show that the St. Albans of to-day has been slowly built up from the work begun by the Abbot Ulsinus a thousand years ago. The first two episodes are in a way introductory, and it would not be proper in a Pageant of St. Albans to exclude the saint who gave the town its name, or the king who founded the Abbey that was afterwards to achieve such fame.

In writing the pageant play I have drawn upon contemporary records of the incidents depicted, wherever this was possible. For Episode 1: The Martyrdom of St. Alban, no such records are available, and I have used for this Bede's account of the martyrdom in his *Ecclesiastical History*. For Episodes 2 and 3 I have used the *Gesta Abbatum Mon. S. Albani* (*Rolls Series*), in conjunction with such works as L. F. Rushbrook Williams' *History of the Abbey of St. Alban*. Episode 4 is taken largely from Shakespeare's *Henry VI*, with additional material from the Abbey chronicles and later works.

From Episode 5 onwards contemporary records are available, and although little is known of the visit of King Charles I depicted in Episode 6, apart from the brief entry in the *Corporation Records of St. Albans* (A. E. Gibbs), it is not inappropriate that the king should be entertained with a mime of the School's history. For the mime I have found

much information in another of Gibbs' books *The History of the Grammar School*. For Episode 7 I have used largely Alfred Kingston's *Hertfordshire during the Great Civil War*, which describes in some detail the incident shown in this episode. *The Report on the Manuscripts of the Earl of Verulam* (H.M. Stationery Office, 1906) has provided the substance for Episode 8, and although the Duke of Marlborough may have been too ill at the time this episode takes place to appear, it seems permissible to introduce him briefly into the scene. A picturesque account in the *Herts Advertiser* provides the background for Episode 9. Although the creation of the Diocese of St. Albans took place in June, and the city Charter was granted in September, the two events have been linked together for the purposes of this episode. *The Victoria County History of Hertfordshire*, the *Dictionary of National Biography* and many local histories and records have been invaluable for general reference.

It is a pleasure to acknowledge the very considerable help I have had from many people. Particularly am I grateful to Captain J. M. Donaldson, M.C., the Chairman of the Pageant Executive Committee, for his guidance in the selection of episodes, the Dean of St. Albans, who has contributed the prayer used in the Epilogue, the Mayor of St. Albans (Councillor W. R. Hiskett, J.P.), the Headmaster of St. Albans School, and the Vicars of St. Michael's, St. Peter's and St. Stephen's, for their personal interest and help. Mrs. Audrey Williams, M.A., F.S.A., of the Verulamium Museum most kindly helped me in planning Episode 1, and Miss Gladys Scott Thomson, M.A., F.S.A., in planning Episode 8.

CYRIL SWINSON.

The Historical Background

BY T. H. MCGUFFIE, M.A.

The notes to Episode I are by MRS. AUDREY WILLIAMS, M.A., F.S.A., Curator of the Verulamium Museum

Episode 1—THE MARTYRDOM OF ST. ALBAN, A.D. 303.

Verulamium, ancestor of St. Albans, was founded as the tribal capital of the Catuvellauni on the Prae Wood plateau west of the River Ver.

At the Roman Conquest the city was attracted down into the valley by the newly-constructed Watling Street. Though built of traditional wattle-and-daub it received the status of *municipium*, whereby its people enjoyed full Roman citizenship. Burnt down by the rebel Queen Boudicca in A.D. 61 the city was quickly rebuilt, this time with massive defensive earthworks, known to-day as 'The Fosse.'

In the 2nd century Verulamium, with its wall enclosing 200 acres, became the third largest city of Roman Britain. Its streets, laid out grid fashion, were bordered with temples, shops and dwellings, all now of flint and brick. At its centre lay the forum and a theatre. The houses were comfortable with central heating systems and gay with painted plaster and mosaics.

Decay in the 3rd century was followed by wholesale rebuilding about A.D. 300, a phase which forms the background to the legend of St. Alban. After short-lived prosperity the city again declined, to die at the end of the 4th century. Its ruins provided materials for church-building in Saxon and Norman times.

Episode 2—KING OFFA FOUNDS THE ABBEY, A.D. 793.

Within two hundred years of Alban's execution, Roman Verulamium had sunk into decay and squalor. Invading plunderers, Saxons and Angles, lit fires on some of its finest mosaic pavements. The city became a ghost; the name still clung, but the substance faded. A new English settlement, Kingsbury, grew up on the far side of the river, near the ford. Its earth walls, stockades, and thatched huts have left few traces. Even Christianity, which had finally triumphed in

the Empire, was driven westwards. The wide and generally tolerant Roman dominion vanished. Watling Street was largely overgrown. War and slaughter, communal farming, fierce boar hunts, tremendous feasts of meat and mead in the times of plenty, tight belts most of the year, large song and little book-learning, made up those early Englishmen's lives; their world was however shot through with a fierce and genuine love of freedom, shining in their poetry and traditional moots.

A pattern emerged of kings and states, flowing together in increasing size. Christianity returned; monasteries revived the seeds of Roman culture; and Offa, King of Mercia, in penitence honoured England's proto-martyr.

Episode 3—ULSINUS HAS A PLAN, A.D. 948.

Time and the necessity for fighting new invaders, the Danes, united England finally under Wessex. The monks of St. Albans, in black and white Benedictine robes, toiled to extend their heritage. As brick-making was a lost art here for almost a thousand years, Verulam's ruins became a quarry; the thin Roman bricks were gathered, the marble burnt for mortar-lime, even the great Hadrianic wall in large part destroyed for its bonding tiles. Moreover, Kingsbury itself was threatened by the new power of the Abbey. Thriving on its holy reputation and wealth, the monastery later bought Kingsbury from the bankrupt Ethelred, and levelled it into the market-town Ulsinus founded.

Danish raids troubled the growing town about the Abbey. The sacred bones and relics were once stolen, sent to Denmark, and thence recovered by a monk's courage and ingenuity. But despite all handicaps, Offa's foundation was powerful enough to challenge with some success even William the Conqueror himself; and this strength was largely due to the work of Ulsinus in promoting trade and learning beneath his Abbey towers.

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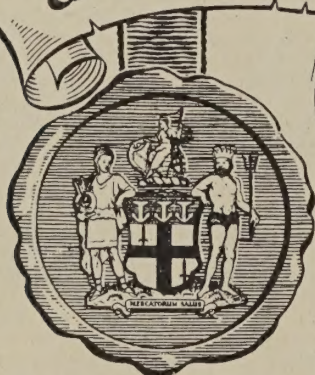
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The Historical Background—continued.

Episode 4—HOLY DAY, A.D. 1440.

By 1440 the superb Abbey was all-powerful in its town and district. Challenges from peasants, barons and kings had been met and overthrown; the lofty white-washed tower was a beloved place of pilgrimage. French kings and princes had passed beaten and captive to pray in the magnificence of the shrine, tended by its hundred monks. Edward Longshanks had mourned there, and left his Eleanor Cross as a token. King John had faced his charter-preparing nobles at a meeting in the nave. Inns and traders flourished. The four Guilds gloried in their new-built clock-tower and belfry. Verulamium was a green ruin, Kingsbury a bend in a road.

England became a nation, with its own music, drama, poetry and dance. The foreign wars, in reality lost, still appeared a pageant of chivalry. Yet young king Henry VI was soon to be engulfed in madness and civil war, to be captured and recaptured in battles fought in St. Albans itself; the Abbey to be plundered; the life of the town to creep decayed instead of vigorously leaping.

Episode 5—QUEEN ELIZABETH VISITS GORHAMBURY, A.D. 1572.

Recovery is coming after decline. The monks have gone, the proud monastery is a ruin; the newly appointed Mayor and Council have bought the Abbey Church, and kept the School in the Lady Chapel. The vast church lands are dispersed among the new nobility. Brick houses appear along the timber-framed over-hanging medieval streets, and in the countryside great mansions are springing up, with wide bay windows, ornamental gardens and well-preserved woods. Potatoes and tobacco are still unknown; but America is a word, and a vigorous life stirs in English harbours, building fast vessels for trade with Muscovy, Africa and the East. Pikemen and musketeers are replacing the archers, gunpowder defeating the iron horse-men.

Shakespeare is a lad of eight; poets, musicians, courtiers and statesmen thrill with the use and promise of gorgeous language and rich sounds; all people are theologians, many ready to die for their beliefs. Though the Queen is supreme, Parliament is not a mere echo of the royal voice; and the ancient institutions of meetings, elections and free discussion are alive again among all Englishmen.

Episode 6—KING CHARLES I VISITS ST. ALBANS SCHOOL, A.D. 1626.

Scotland and England are united under one king, but divisions are splitting quietly the apparently solid structure of society. Englishmen are preparing themselves to fight the doctrine of divine right, as practised by Charles and his father. The little handsome king, with his bad language and worse spelling, his love of the arts, his uncertain obstinacy and terrifying destiny, was fated to traverse St. Albans twice more; once as a disguised fugitive from a broken army, seeking refuge amongst the Presbyterian Scots; and again for the last time on the way to imprisonment, a masked executioner in Whitehall, and his final "Remember!"

The town Charles saw we should recognise. St. Peter's and St. Michael's Churches were joined by houses to the Market Place, Clock Tower and Abbey. The Wednesday and Saturday markets flourished. Woods and fields were closer than to-day, but Ulsinus' pattern was filling, his plan shaping the future.

Episode 7—THE CIVIL WAR, SATURDAY, 14th JANUARY, 1643.

The clash of weapons in 1642 found many Englishmen uncertain about the struggle, and unwilling to take definite action. St. Albans resolved its problem when Cromwell strove successfully to stop the King's High Sheriff from recruiting militia. Cromwell at least knew his own mind. He also knew this town, for Alban Cox, of Beaumonts Manor, St. Albans, was his personal friend, often visited, a man who became a chief parliamentary figure when Hertfordshire turned overwhelmingly against the King.

Cromwell went on to found his new Model Army, soldiers dressed in the traditional scarlet jacket, with buff coat, iron pot hat and stout jack-boots, carrying pike, musket, pistol or broadsword. England was soon to become once more a powerful force in Europe, though splendour and finery suffered through Puritan plain living, and maypoles and mince-pies were cancelled in favour of image-smashing. In St. Albans the Abbey was used as a prison, and the Eleanor Cross broken to pieces.

Episode 8—WHIGGS VERSUS TORIES. AN ELECTION SCENE, A.D. 1722.

By 1722 Parliament was supreme in power, and the party system solidifying, soon to produce Cabinet and Prime Minister.

St. Albans' connection with Parliament is very ancient. The first recorded members were in 1301; probably the town was represented at the first Model Parliament of 1295.

A busy turbulent life swirled through St. Albans streets; many mail and stage coaches changed horses here, Londoners came for a day's outing, the market produce rumbled in heavy wagons along the miry roads. Marlborough and his beloved shrew of a wife preferred a modest comfort in Holywell House, to the breath-taking grandeur of Blenheim Palace; and Sarah left money for the Marlborough Buildings, still standing, balanced and lovely, in austere precision near St. Peter's Church.

About the town the open lands were soon to be enclosed; fences, ditches, drainage, new root crops and rotations gave increased food, for a growing population. Within a few years a silk-mill and a cotton-mill signalled new industrial methods here. Straw plaiting and hat-making developed into a thriving home industry. The churches were vital centres of social life and culture; and the market increased in size with the town.

Episode 9—ST. ALBANS IS A CITY, A.D. 1877.

The town, like England itself, has multiplied in the last century and a half; ten thousand people live within the limits set by Ulsinus, and three railway stations have been recently opened. Men no longer go armed. All men with property, however small, now have votes. Tea, coffee and cocoa are replacing wine and beer. Trade and the Bible spread Victorian peace over the globe; food from abroad enlivens the table and depresses home farming; and a gradually gathering pressure of organisation, cheap production and mass employment is squeezing out the home worker from beneath his own rooftree into the factories. Faster transport brings St. Albans increasingly under the sway of London.

The Abbey, often patched up, is soon to suffer but survive under Lord Grimthorpe's ruthless energy. Shopkeepers and small traders thrive on the increasing market. A local newspaper is printed in the old moot hall. The city is still very much alive, proud of its school and history, conscious of its heritage.

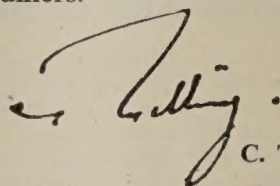
The Cathedral, its Bishop and the city charter carry on from the Roman *municipium* and martyr, from Offa and from Ulsinus.

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Waterend afterwards passed from the Jennings family and eventually became a farm on the Bocket Estate. In the year 1938 Waterend House was once more made into a private residence by Lord Bocket, and the Barn, which greatly obscured the view, being no longer required for its former purpose, was brought to St. Albans and re-erected by him and now forms part of Waterend Barn Restaurant.

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The Pageant Music

The music forms an integral part of the Pageant, its main purpose being to "adorn the tale." The choice has been governed by the over-riding principle of its suitability to create, sustain or enhance the atmosphere of the Episodes.

At the same time it should reflect the musical style of the period, and the music has therefore been drawn as far as possible from sources contemporary with the various incidents which it accompanies.

The almost entire absence of record of music of the first few centuries A.D., and the fact that even if any compositions of the period were extant they would be quite unacceptable to modern ears, presented difficulties which have been overcome by the kindness of Robert Lindsay the conductor of the St. Albans Orchestral Society, and of Meredith Davies, the Cathedral organist, in undertaking the composition of music for Episodes 1 and 2 respectively.

Fanfares and the "Pageant Hymn" which announce and precede the Prologue have been specially written by Lewis Covey-Crump.

The selection and gathering together of the music has presented many problems, in the solving of which I acknowledge with gratitude the invaluable assistance of Lewis Covey-Crump and Robert Lindsay.

ARTHUR WALLER, *Master of the Music.*

Programme of Music

OVERTURE	Triumphal March from "Caractacus"	Elgar
PROLOGUE	Fanfares and the Pageant Hymn	L. Covey-Crump
EPISODE 1	Incidental Music	Robert Lindsay
EPISODE 2	Incidental Music and Song of Praise	Meredith Davies
EPISODE 3	Ps. 27 "Dominus illuminatio" "Vexilla Regis" "O filii et filiae"	Plainsong Plainsong <i>Ancient Church Melody</i> (arranged by Walford Davies)
EPISODE 4	Incidental Music from Suite on Folk Tunes The Agincourt Song Ps. 148 "Lord who had made us for Thine own" Fanfares	Arnold Foster arr. L. Covey-Crump Holst Robert Lindsay
EPISODE 5	Incidental Music from Suite on Folk Tunes "Musick for the King's Sackbuts" Music for Brass Morris Dance	Arnold Foster Matthew Locke Robert Lindsay Traditional
EPISODE 6	Incidental Music from "The Faerie Queene" Sword Dance	Purcell, arr. Brown Traditional
EPISODE 7	Incidental Music Alarums and Exit Music	Purcell, arr. Brown Robert Lindsay
EPISODE 8	"Lillibullero"	arr. Alan Paul
EPISODE 9	"Turn Back O Man" "Nottingham Swing" Polka from "The Bartered Bride"	Holst Traditional Smetana
EPILOGUE	"Crown Imperial" "The Pageant Hymn" "Pomp and Circumstance March" No. 4	Walton L. Covey-Crump Elgar

The Choir comprises St. Albans Bach Choir, St. Albans United Choir, St. Albans Musical Society, choirs of the parish churches of St. Albans, the choir of Luton Parish Church, and other St. Albans musical and choral societies.

The Orchestra (Leader: MARJORIE BOSE), comprises St. Albans Orchestral Society, St. Albans Youth Orchestra, and students of the Royal College of Music.

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MISS DAPHNE DAY
MISS BETTY BATES (Secretary)

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MICHAEL BRIGGS
ALEC FIEBER
HAROLD WESTELL

Music

ARTHUR WALLER, A.R.C.M. (Chairman)
LEWIS COVEY-CRUMP (Music Organiser)
A. MEREDITH DAVIES, M.A., B.MUS., F.R.C.O.
ROBERT LINDSAY, B.SC., A.I.C., L.R.A.M.

The Cast

(Speaking parts only. It is regretted that lack of space prohibits the inclusion of the names of all performers.*)

PROLOGUE

Chorus	REV. DAVID BICKERTON
Attendants	BOYS OF ST. ALBANS SCHOOL

EPISODE 1—THE MARTYRDOM OF ST. ALBAN, A.D. 303

Sub-Producer: TERENCE NEWELL.	Secretary: Miss E. SHEPHARD.	Wardrobe Mistress: DINAH BRIGGS.
	Property Master: A. FIEBER	
Chief Magistrate	ROBERT GIBSON	
Alban	BRIAN HUGHES	
His Friend, later called Amphibalus	ALEC FIEBER	
Man	ROBERT GIBSON, JUN.	

Cast recruited from: THE COMPANY OF TEN, CHRIST CHURCH, THE TOWNSWOMEN'S GUILD, GIRLS' TRAINING CORPS, BRITISH LEGION, HATFIELD ROAD SECONDARY MODERN BOYS' SCHOOL, PRIORY PARK SECONDARY MODERN GIRLS' SCHOOL, CHURCH LADS BRIGADE

EPISODE 2—KING OFFA FOUNDS THE ABBEY, A.D. 793

Sub-Producer: FREDERICK BRADLEY.	Secretary: Miss I. HAYNES.	Wardrobe Mistress: Miss D. CORBLE.
	Property Master: PHILIP BRADLEY	
Officer	C. E. MOBBS	
Man	CANON D. R. FEAVER	
Archbishop of Lichfield	J. R. KELL	
Bishop of Leicester	REV. C. R. MARTINEAU	
Offa, King of Mercia	REV. H. BLENKIN	
Wisigood, 1st Abbot	DR. T. HARE	

Cast recruited from: THE ABBEY, TOWNSEND SECONDARY MODERN SCHOOLS FOR BOYS AND GIRLS, SEA CADETS

EPISODE 3—ULSINUS HAS A PLAN, A.D. 948

Sub-Producer: FREDERICK BRADLEY.	Secretary: Miss I. HAYNES.	Wardrobe Mistress: Miss M. CORBLE.
	Property Master: PHILIP BRADLEY	
Ulsinus, 6th Abbot	THE DEAN OF ST. ALBANS	

Cast recruited from: THE ABBEY, ST. ALBANS HIGH SCHOOL FOR GIRLS, TOWNSEND SECONDARY MODERN SCHOOLS WITH REPRESENTATIVES FROM ST. MICHAEL'S, ST. PETER'S AND ST. STEPHEN'S CHURCHES

EPISODE 4—HOLY DAY, A.D. 1440

Sub-Producer: GEORGE ROBINSON.	Secretary: A. MUHLEY.	Wardrobe Mistress: MRS. CAREY.
	Property Master: A. J. BAKER	
The Duke of Gloucester	MALCOLM HOWGATE	
King Henry VI	DERRICK CHALLIS	
Man	E. WHEELER	
Earl of Suffolk	A. MUHLEY	
Cardinal Beaufort	P. CRANE	
Saunders Simpcox	KENNETH MARTIN	
His Wife	JOAN MASON	
Duchess of Gloucester	NANCY DYMOKE GREEN	
Mayor of St. Albans	A. V. BIRD	
Beadle	A. J. BAKER	

Cast recruited from: ST. SAVIOURS' CHURCH, MALLORY PLAYERS, SCOUTS AND GUIDES, ENGLISH FOLK DANCE AND SONG SOCIETY

EPISODE 5—QUEEN ELIZABETH VISITS GORHAMBURY, A.D. 1572

Sub-Producer: GEOFFREY GINN.	Secretary: MICHAEL HESKETH-PRICHARD.	Wardrobe Mistress: Miss G. MEE.
Robert Woolley, Mayor	J. H. BRETT	
Sir Nicholas Bacon	MICHAEL HESKETH-PRICHARD	
Lady Bacon	MRS. M. HESKETH-PRICHARD	

* A Supplement to the *Herts Advertiser* 25th June, 1948, includes a complete list of performers.

EPISODE 5—(continued).

Francis Bacon
Queen Elizabeth

MARK BRETT
THE HON. MRS. JOHN GRIMSTON

Cast recruited from: ST. MICHAEL'S CHURCH, ST. ALBANS SCHOOL, EX-HOME GUARD ASSOCIATION, ST. ALBANS MORRIS MEN, BEAUMONT SECONDARY MODERN SCHOOLS FOR BOYS AND GIRLS

EPISODE 6—KING CHARLES VISITS THE SCHOOL, A.D. 1626

Sub-Producers: P. R. HEATHER and H. SCHOFIELD.

Wardrobe Mistress: MRS. W. T. MARSH

Duke of Buckingham
John Harmar, The Headmaster
King Charles I
The Chronicler
A Small Boy
Head Boys

D. J. GEORGE
R. V. CLIFFORD
L. G. WALKER
J. A. BARNETT
R. A. WORTLEY
A. J. LANE, H. WILSON, J. A. BARNETT

The gavotte arranged by Miss D. F. BEAK
Cast recruited from: ST. ALBANS SCHOOL AND BIRKLANDS

EPISODE 7—THE CIVIL WAR, A.D. 1643

Sub-Producer: FRANK LLOYD. Secretary: Miss A. E. BOLTON. Wardrobe Mistress: Miss I. MEE.

Property Master: MICHAEL BRIGGS

Sir Thomas Coningsby, Sheriff
Herald
Cromwell

F. MORRIS
E. HODGES
D. ASHTON DAVIES

Cast recruited from: ST. PETER'S CHURCH, JUPITER PLAYERS

EPISODE 8—WHIGS VERSUS TORIES, A.D. 1722

Sub-Producer: MAURICE COLES. Secretary: Miss M. BROOKES. Wardrobe Mistress: MRS. L. MEE.

Property Master: L. G. PEGRAM.

Traveller
Man
Town Clerk
William Carr, Mayor
Viscount Grimston
Joshua Lomax
William Clayton
Duke of Marlborough
Duchess of Marlborough

N. J. BARKER
HAROLD DAVIES
H. E. BROOKES
F. R. READER
V. H. St. PIERRE
R. PEROLLS
F. SAUNDERS
RICHARD DAVIS
Mrs. R. DAVIS

Cast recruited from: ST. STEPHEN'S CHURCH, PARK STREET WOMEN'S INSTITUTE, PARK STREET TOC H., THE GARDEN CLUB, SEA CADETS, PIONEER CLUB

EPISODE 9—ST. ALBANS IS A CITY, A.D. 1877

Sub-Producer: ARTHUR SWINSON. Secretary: F. E. STEPHENSON. Wardrobe Mistress: MRS. D. GRIEVE.

Property Master: R. H. SALTMARSH

Town Crier
William Canon Smith, Mayor
Rt. Rev. Thomas Legh Cloughton, Bishop

KENNETH BUNCE
COUNCILLOR W. R. HISKETT (Mayor of St. Albans)
VICTOR STANTON

Cast recruited from: OLD ALBANIAN CLUB, TABERNACLE BAPTIST CHURCH, ST. JOHN'S CHURCH, TRINITY FELLOWSHIP, BIRKLANDS, LYNDAL SCHOOL, ROSE'S SPORTS AND SOCIAL CLUB AND MEMBERS, OFFICERS AND EMPLOYEES OF THE ST. ALBANS CITY COUNCIL

EPILOGUE

Chorus REV. DAVID BICKERTON
Attendants BOYS OF ST. ALBANS SCHOOL

Marshal of the Arena: ARTHUR SWINSON

Personal Assistants to the Pageant Master: MRS. BRENDA SWINSON AND LESLIE V. HIDER

Pageant Masters' Secretary: KATHARINE PRESS

PAGEANT MASTER: CYRIL SWINSON

Acknowledgments

COSTUMES: the greater part supplied by The Faith Wardrobe, 7 Tufton Street, S.W.1. Additional costumes lent by The Company of Ten, Mrs. L. Mee, Mrs. Dymoke Green, and others, with a large number made under the direction of the Costume Committee by voluntary workers. The costume of the Chorus is designed by the St. Albans School of Art.

WIGS supplied by Mr. L. Mee, 56 Warwick Road, St. Albans.

FLORAL DECORATIONS and **BOUQUETS** kindly donated by Ryder & Son (1920) Ltd., St. Albans.

PROPERTIES made by the Property Committee and voluntary workers under the direction of Harold Corble. Banners designed by Christopher Webb; the models of the three churches by D. Payne and D. Elliott; the Feretory in Episode 4 by Derrick Challis. Other properties designed by Harold Corble and Michael Briggs. The carriage used in Episode 8 kindly lent by the Earl of Verulam.

ACKNOWLEDGMENT is due to the Magic Circle, and in particular to Geoffrey Buckingham, M.I.M.C., for research and advice in arranging the magical and juggling items in Episode 4, and to John Young, M.I.M.C., the conjuror, and Freddie Risto, A.I.M.C., the juggler.

AMPLIFICATION by Philips Electrical, Ltd., and installed by L. T. Read and Crossley-Stocker, Ltd.

FIELD TELEPHONES by the J.T.C., St. Albans School, and 7th Cadet Bn., Hertfordshire Regiment.

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OFFICIAL PAGEANT PHOTOGRAPHERS—Photo-Precision, Ltd., Holywell Hill, St. Albans.

PHOTOGRAPH SALES under the direction of B. G. Peters, Ph.D.

STEWARDS, PROGRAMME SELLERS, MARSHALS, etc., recruited from local voluntary organizations, schools, etc.

A Word of Thanks

To the performers, the choir and orchestra, the stewards, box-office and other officials, and the working parties, to the Mayor and the City Council and the civic officials, to the Dean, the Vicars of the three churches and the Headmaster of St. Albans School, to donors and guarantors, civic societies and organisations, and to countless others, may we express our grateful thanks for their splendid help and co-operation in making the Pageant possible. In a time of shortage and restriction difficulties have been many, but with unlimited goodwill and enthusiasm our problems have all been overcome. The work of everyone in the Pageant has been a valuable contribution to our civic life, and if, as we hope, it has stimulated civic pride, not only in the city's past but in its future, our united work will have been more than worthwhile.

Any profits there may be from the Pageant will be given to the Old Folks' Home, St. Albans, the work on which is now well in hand.

J. M. DONALDSON, *Chairman Pageant Executive.*
CYRIL SWINSON, *Pageant Master.*

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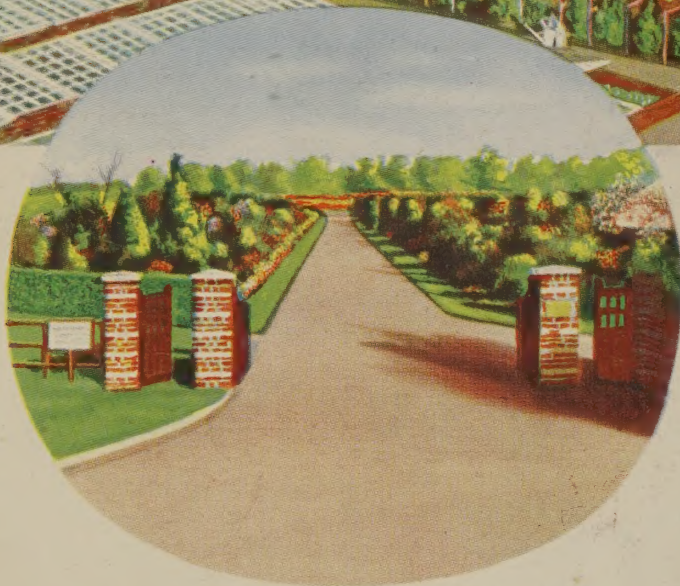
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To all visitors attending the St. Albans Millenary Celebrations, RYDERS extend a cordial invitation to view their model nursery situated just south of Hatfield Aerodrome at the junction of the Barnet-By-Pass and North Orbital Road. Here are grown and cultivated much of the seeds and nursery stock that have made the name "RYDERS" famous for more than 70 years.

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A R E N O W N E D N A M E I N H O R T I C U L T U R E

Although the English hedges are picturesque they, along with the many isolated trees at the margins and within the fields, rob the crops, especially since the fields are small and there are many miles of hedges.

We reach Oxford about 12:00 noon. I am assigned rooms in the "New Buildings" at Magdalen College. These buildings are, of course, actually very old.

After lunch, some of us visit Professor Morison's laboratory and examine his collection of monoliths, which are mostly from England and East Africa. I walk back through the town, stopping for tea, to my rooms for a rest at 5:00.

We have dinner at 7:15. After a little talk I prepare for bed. This is certainly a cold dreary place just now. The ceilings of the rooms are very high and the only fire is a feeble little electric heater. My windows look out on a park of grass and old trees populated with deer and rabbits. No outlet for an electric razor. To bed to get warm.

June 21

I am up early in a cold, wet morning. One goes a long way here for hot water. We have breakfast at 8:00 and leave in the busses about 10:00 for a field trip



K-1555. Oxford. High Street.



K-1556. Oxford. Bodleian Library and
Radcliffe Camera.



K-1557. Oxford, Magdalen College. "New" buildings.

north of Oxford.

We go in the direction of Banbury. The soil is gently undulating to nearly level. When cultivated it is reddish-brown and makes one think a bit of the Fox soils of the Middle West. Here too, the wheat is good to very good and the hay is poor. Some of the grain fields are also quite weedy. Dr. Muir suggests that this soil is mostly residual from ironstone.

We pass Hopcrofts Holt. The soil is brown but less red. The land is undulating in places. The solum is relatively thin over sedimentary rocks.

A little way beyond, we come down into a gently rolling valley, then up again to Deddington on gently rolling upland. Beyond, we go down again to a rather narrow stream valley, and then to gently rolling land. In the cultivated fields the soil is reddish-brown.

We stop for a few moments south of Banbury to see a deep phase of the soil from red ironstone of Jurassic time. This "Banbury (deep)" soil is mostly a medium loam to three feet. It is very gently undulating in long sweeps. The soil responds well to lime and is a phosphate fixer.

We then drive through Banbury and see the "Banbury Cross" of the well-known nursery rhyme.



K-1558. South of Banbury. Landscape on deep phase of Banbury series from Jurassic ironstone. A medium loam. Fixes phosphate.



K-1607. Near Banbury. Cultivating potatoes on Banbury soil from Jurassic ironstone.



K-1608. England. Near Banbury. Brown Forest soil from Jurassic ironstone. Portrait of Sir E. John Russell.

Many of the houses in this area are relatively small and have steep straw-thatched roofs.

We stop for a moment near Wroxton by an old iron-works to look at an old ironstone quarry. This looks like a siliceous, ferruginous, calcareous sandstone. It contains both siderite and some calcium carbonate. It is used as a building stone for houses. At this quarry the rock material has been removed and the surface soil replaced so that grain may be produced on the old excavated site.

Nearby, I take soil profile sample No. 1 in great haste.

Soil profile sample No. 1

A _p	0-10"	Reddish-brown to yellowish-red clay loam. Easily friable small rounded nut and granular structure.
B ₂	10-24"	Reddish-brown clay; large rounded nut structure with some coatings.
B ₃	24-36" (48)	Orange-yellow disintegrated rock with a layering inherited from the rock beneath.
C and D		Ironstone.

This is a Brown Forest soil tending a bit toward Gray-Brown Podzolic. There are some gradual transitions between the horizons, but the line between B₂ and B₃ is



K-1559. Near Veraxton. Edge of extensive old ironstone quarry. Surface soil saved and replaced after removal of ironstone.

fairly strong. Any A_2 or B_1 has been incorporated into the A_p . This soil is on a very gentle, long-cultivated slope. The internal drainage is nearly free, even in the deep pits. Here also, the surface soil is saved and replaced after the rock has been removed to give a good agricultural soil that is said to be somewhat better than the original.

We pass more cultivated fields in which the soils appear distinctly red -- as red as one ever sees in Brown Forest or Gray-Brown Podzolic regions.

We stop for lunch at Edge Hill. Here Charles the First won the battle of Edge Hill in 1642 -- the only battle that he did win in the Civil War. After lunch, I go up into the old tower and get a broad view of the countryside. Across the street are some farm houses one of which is as much as 700 years old.

For some reason, there is a very long delay after lunch. Finally, we drive southeast and see an unglaciated area of Podzol with deep ortstein. The soil looks a little like a deep phase of our Ogemaw.

Just north of Wigginton, we stop to see a Podzol on fine sand. This is not a good place to make a profile. The land is unglaciated and the profile is made in an old sand bank or ridge, probably of wind origin. Now the

fairly strong. Any A_2 or B_1 has been incorporated into the A_1 . This soil is on a very gentle, long-continued slope. The internal drainage is nearly true, even in the deep pits. Here also, the surface soil is saved and re-placed after the rock has been removed to give a good agricultural soil that is said to be somewhat better than the original.

We pass more cultivated fields in which the soils appear distinctly red -- as red as one ever sees in Brown Forest or Gray-Brown Podzolic regions. We stop for lunch at Edge Hill. Here Charles the First won the battle of Edge Hill in 1645 -- the only battle that he did win in the Civil War. After lunch, I go up into the old tower and get a broad view of the countryside. Across the street are some farm houses one of which is as much as 700 years old.

For some reason, there is a very long delay after lunch. Finally, we drive southeast and see an unglaciated area of Podzol with deep cuttings. The soil looks a little like a deep phase of our Oregon. Just north of Winton, we stop to see a Podzol on fine sand. This is not a good place to make a profile. The land is unglaciated and the profile is made in an old sand bank or ridge, probably of wind origin. Now the



K-1560. Edge Hill. View of plain where Charles I won the battle of Edge Hill in 1642. (The only one he did win!)



K-1609. Edge Hill. View of plain from tower.



K-1561. Edge Hill. Old house, characteristic of this region.



K-1610. Edge Hill. View of house near tower.

cover is scattered trees and rather dense grass. Likely there has been some recent accumulation.

Soil profile sample No. 2

A _p	0-10"	Salt-and-pepper, medium gray loamy-fine sand. The depth and appearance suggests contamination.
A ₂	10-34"	Light gray loamy-fine sand.
B ₂	34-36" (48)	Sharp but irregular upper boundary. Nearly black humus-rich ortstein.
B ₃	(36-45)-48	Mottled compact sand, streaked with yellowish-brown and yellow.
C	48 plus	Yellowish sand.

There is such a big crowd around this profile that I can hardly get anything done. The soil appears to me to be an old Ground-Water Podzol, somewhat better drained now than originally, and with an accumulation in the upper part from local sources since and during the formation of the profile. Mainly, it is a curiosity.

We have some more delays and then stop at Great Tew, a beautiful English country village.

Near Leafield, we stop to look at a soil that is so easily invaded by forest trees that long leys are not practicable. Here I see brown granular clay loam --

cover is scattered trees and rather dense grass. Evidently there has been some recent accumulation.

Soil profile sample No. 2

A ₁	0-10"	Self-sand-pepper, medium gray loamy-fine sand. The depth and appearance suggests contamination.
A ₂	10-34"	Light gray loamy-fine sand.
B ₁	34-36"	Sharp but irregular upper boundary. Nearly black humus-rich organic.
B ₂	(36-42)-48"	Settled compact sand, streaked with yellowish-brown and yellow.
C	48 plus	Yellowish sand.

There is such a big crowd around this profile that I can hardly get anything done. The soil appears to me to be an old Ground-Water Podzol, somewhat better drained now than originally, and with an accumulation in the upper part from local sources since and during the formation of the profile. Mainly, it is a curiosity. We have some more delays and then stop at Great Tew, a beautiful English country village. Near Iwerfeld, we stop to look at a soil that is so easily invaded by forest trees that long layers are not practicable. Here I see brown granular clay from --



K-1611. Southeast of Edge Hill. Humus
Podzol in sand.

a Green Forest soil on alluvial colluvial limestone.

I look at the soil hastily for it has been described

as:

A 0-7" Dark grayish-brown coarsely and poorly granular, merging to medium blocky, silty clay.

B 7-12" Yellowish-brown medium blocky



K-1562. The Great Tew. Street scene.

5/15.

June 22

I am up at 7:00 on a cool and cloudy morning after a very good rest. We leave Oxford at 9:00 a.m. for a trip to the north and northwest.

a Brown Forest soil on siliceous oolitic limestone.

I look at the soil hastily for it has been disturbed

some:

A_p 0-7" Dark grayish-brown coarsely and
 poorly granular, merging to
 medium blocky, silty clay.

B 7-12" Yellowish-brown medium blocky
 silty clay to clay.

C 12 plus Rotten broken limestone.

This soil is obviously deeper in many places.
In the woods now the soil has a very dark brown
granular mull about 1/4" thick. In places there
is a dense second growth of hawthorne, hazel, and
so on.

Some distance after we walk through an old woods
on a steep escarpment and across a pasture to see the
remains of the moziac floor of a Roman villa. The
pasture has a good turf. It is mainly grass, but with
much small clover and many thistles. It is a steep climb
back to the busses.

We drive on to Oxford and reach our quarters about
6:45.

June 22

I am up at 7:00 on a cool and cloudy morning after
a very good rest. We leave Oxford at 9:00 a.m. for a
trip to the north and northwest.

a brown forest soil on siliceous oolitic limestone.
I look at the soil hastily for it has been disturbed

some:

A	0-7"	Dark grayish-brown coarsely and poorly granular, merging to medium blocky, silty clay.
B	7-12"	Yellowish-brown medium blocky silty clay to clay.
C	12 plus	Rotten broken limestone.

This soil is obviously deeper in many places.
In the woods now the soil has a very dark brown
granular mott about 1 1/2" thick. In places there
is a dense second growth of Hawthorne, hazel, and
so on.

Some distance after we walk through an old woods
on a steep escarpment and across a pasture to see the
remains of the moated floor of a Roman villa. The
pasture has a good turf. It is mainly grass, but with
much small clover and many thistles. It is a steep climb
back to the houses.

We drive on to Oxford and reach our quarters about

6:15.

June 22

I am up at 7:00 on a cool and cloudy morning after
a very good rest. We leave Oxford at 9:00 a.m. for a
trip to the north and northwest.

English roads are much prettier than those in America. One sees almost no advertising signs and the roadsides are more carefully cut. Much of this roadside work is done quite inefficiently by hand labor.

We go through Moreton-in-the-Marsh and Bourton-on-the-Hill. We see many Cotswold villages. On the higher lands one sees some shelter belts of trees against the strong winter winds.

We stop in an old stone quarry on Broadway Hill to see the Sherbourne series. This is a thin Brown Forest soil on limestone, locally called "Red-and-Brown calcareous soil".

Soil profile sample No. 3

- | | | |
|----------------|---------|--|
| A _p | 0-4" | Reddish-brown softly granular clay loam. Many roots. |
| B ₂ | 4-8" | Reddish-brown fine, rounded and sub-angular, nut-structured clay. (I am told that ordinarily there is some free carbonate in the solum). |
| B ₃ | 8-11" | Yellowish-red sub-angular fine blocky clay with a few pieces of rock. |
| C | 11 plus | Fragmented oolitic limestone. |

The soil is well-drained. The surface is strongly undulating. Formerly the soil was forested but now wild places have grass. Most of the land is cultivated and yields are fair.

English roads are much prettier than those in America. One sees almost no advertising signs and the road-sides are more carefully cut. Much of this roadside work is done quite inefficiently by hand labor.

We go through Morston-in-the-Marsh and Bownton-on-the-Hill. We see many Cotswold villages. On the higher lands one sees some shelter belts of trees against the strong winter winds.

We stop in an old stone quarry on Broadway Hill to see the Sherbourne series. This is a thin brown forest soil on limestone, locally called "Red-and-brown calcareous soil".

Soil profile sample No. 3

A ₂	0-14"	Reddish-brown soft granular clay loam. Many roots.
B ₂	4-8"	Reddish-brown fine, rounded and sub-angular, nut-structured clay. (I am told that ordinarily there is some free carbonate in the column).
B ₃	8-11"	Yellowish-red sub-angular fine blocky clay with a few pieces of rock.
C	11 plus	Fragmented collitic limestone.

The soil is well-drained. The surface is strongly undulating. Formerly the soil was forested but now wild places have grass. Most of the land is cultivated and yields are fair.



K-1563. Broadway Hill. Sherbourne series, locally called "Red-and-brown calcareous soil." Thin Brown Forest soil from fragmental oolitic limestone. Left to right: Stephens, Baldwin, Mukherjee, Crowther, Jacks, Aubert, Edelman.



K-1564. Broadway Hill. Cabbages on Sherbourne soil.



K-1612. Near Bourton-on-the-Hill in the Cotswold Hills. Broadway Hill. Profile of Sherbourne soil - thin Brown Forest on limestone, locally called "Red-and-Brown calcareous."

We continue down a strongly sloping escarpment to the little town of Broadway. Near the lower part we see many orchards, mainly apples. This is a beautiful little town with many gorgeous gardens with climbing roses.

As usual, we have alternate sun and showers. Certainly, the weather is difficult for the farmers who are trying to make hay.

From Broadway to Wellersey we see brown soils on terraces with fair to imperfect drainage. Although there are many vegetable gardens and orchards the land is mainly in meadow and cereals. Several fields have been ridged for better drainage. Beyond Wellersey, we come out on a broad imperfectly drained plain.

Just beyond Honeybourne Station, we stop to look at the Evesham series, a heavy clay soil under grass.

- A_p 0-2" Granular, very dark brownish-gray heavy clay.
- A₃ 2-10" Very dark grayish-brown heavy clay with medium to coarse angular blocky structure.
- B 10-30" Light olive brown heavy clay, coarsely blocky with prismatic breakage.
- G 30 plus Gray, mottled with grayish-brown, heavy massive clay with irregular coarse cracking.

We continue down a strongly sloping escarpment to the little town of Broadway. Near the lower part we see many orchards, mainly apples. This is a beautiful little town with many gorgeous gardens with climbing roses.

As usual, we have alternate sun and showers. Certainly, the weather is difficult for the farmers who are trying to make hay.

From Broadway to Wellersey we see brown soils on terraces with fair to imperfect drainage. Although there are many vegetable gardens and orchards the land is mainly in meadow and cereals. Several fields have been ridged for better drainage. Beyond Wellersey, we come out on a broad imperfectly drained plain. Just beyond Honeybourne Station, we stop to look at

the Evesham series, a heavy clay soil under grass.

- | | |
|----------------|--|
| A _p | 0-2" Granular, very dark brownish-grey heavy clay. |
| A ₂ | 2-10" Very dark grayish-brown heavy clay with medium to coarse angular blocky structure. |
| B | 10-30" Light olive brown heavy clay, coarsely blocky with prismatic breakage. |
| C | 30 plus Gray, mottled with grayish-brown, heavy massive clay with irregular coarse cracking. |

The roots are concentrated just above G.¹/ The soil is developed from the Lower Lias, ¹/₄ a clay rock. The surface is undulating.

This is an immature imperfectly drained Brown Forest soil from very heavy clay. It is a productive soil, even for fruit where tile drained. It reminds me of our Nappanee clay. The surface is exceedingly sticky now for walking.

After a look at this soil it rains hard and we drive on northwest through Evesham to Pershore. We go through strongly undulating land likely made up of old gravelly terraces. We see several orchards with plums, apples, and pears.

Some of the terraces of acid sand and gravel give rise to the Pershore series. There are many steps of these terraces down to the river. Here on the upper terrace the soil is gravelly in the surface and shows evidence of slight podzolization. It is somewhat darker brown than our Antigo or Onemia. The gravelly material may have had a cover in places of snow sludge carrying clays, including calcareous clays.

We take lunch at Pershore.

After lunch we pass through Wyre Piddle in the

¹/ This term was given these rocks by geologists who understood the rock quarrymen to say "lias" for "layers".

The roots are concentrated just above the soil is developed from the lower layers, a clay rock. The surface is undulating.

This is an immature imperfectly drained brown forest soil from very heavy clay. It is a productive soil, even for fruit where the drained. It reminds me of our Japanese clay. The surface is exceedingly sticky now for walking.

After a look at this soil it rains hard and we drive on northwest through Bessham to Pershore. We go through strongly undulating land likely made up of old gravelly terraces. We see several orchards with pines, apples, and pears.

Some of the terraces of acid sand and gravel give rise to the Pershore series. There are many steps of these terraces down to the river. Here on the upper terrace the soil is gravelly in the surface and shows evidence of slight podzolization. It is somewhat darker brown than our Antigo or Onamia. The gravelly material may have had a cover in places of snow slugs carrying clays, including calcareous clays.

We take lunch at Pershore.

After lunch we pass through Wyre Piddle in the

1/ This term was given these rocks by geologists who understood the rock quarries to say "lilas" for "lavas".

valley of the Avon. The soil is a Brown Forest soil with some slight expression of Gray-Brown Podzolic. The Pershore series are developed mostly on acid sands and gravels and have a relatively uniform solum.

- A_p 0-6" Reddish-brown fine sandy loam; softly granular and moist but rather hard when dry. Many roots.
- B 6-36" Reddish-brown sandy loam. The soil has vertical breaking and is rather hard in place. Many pores. The roots penetrate easily.
- B₃ 36-48" Softer reddish-brown sandy loam, somewhat heavier than B₂.
- C 48 plus Reddish-yellow loose sand with some gravel.

In the cut I see some shallower places where the solum is only 30" deep. Elsewhere broad tongues go down to 60". The soil is nearly level. It is an excellent soil for market gardens.

Near Fladbury, I see a similar soil, excellent for vegetables and fruit. Crops on this soil cannot withstand much drought and farmers are using some overhead irrigation. Further south, the soils on similar terraces are dark reddish-brown in color.

We drive through some beautiful country in the Cotswolds, west of Stow-on-the-Wold, and stop at Burford

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We drive through some beautiful country in the Cotswolds, west of Stow-on-the-Wold, and stop at Burford.



K-1565. Burford. Vegetable garden.



K-1566. Burford. Rabbit hutches in garden.



K-1567. Burford. Tea garden of inn.



K-1613. A little west of Stow-on-the Wold. In the Cotswold Hills.

for tea. We have intermittent showers but I get a few pictures of the gardens.

On the way back to Oxford, we stop to look at an exposure of an alleged crou^{te} calcaire in a section from calcareous outwash gravel. This seems to me to be simply small patches of redissolved and redeposited cross-bedded marl, hardened a bit from exposure. Dr. Muir, however, thinks that this calcium carbonate, although very spoty and irregular, is the result of precipitation from ascending and/or descending water. The calcium carbonate varies greatly in thickness and is discontinuous. There are large gaps and small isolated bits. Both Reifenberg and I are inclined to accept the simple geological explanation rather than the more complicated notion of pedological origin.

We are back at Magdalen College at 6:30. I have dinner, read and write for awhile, and then to bed.

June 23

I am up at 7:00 on a nice, bright sunny morning. First, I try some pictures from my window of the deer in the park.

Immediately after breakfast we learn of the bad news of internal revolt and truce violations in Palestine. Reifenberg is much upset.

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news of internal revolt and twice violations in Palestine.
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We got into the house about 9:00 for a visit to
Eagley Road south of Oxford. First, we took a walk
spruce planted forty years ago. The surface of the
soil now has a fairly good A_2 and the underlying is a
Podzol A_2 . I examined hastily the soil developed from
granite.



Under the Douglas fir in an adjacent plot the
is two to three inches thick.

We walk on through the woods. There are very beauti-
ful old hemlocks. On a gravelly slope to the west, I

K-1568. View of park from the window of
my room at Magdalen College.

Brown Forest, from calcareous rocks. Then I am told that
Dr. Murrill called this soil a Podzol in 1915. I cannot
understand this at all. I am sure he must have seen a

We get into the busses about 9:00 for a visit to Bagley Wood south of Oxford. First, we look at some spruce planted forty years ago. The surface of the soil now has a fairly good A_0 and the beginning of a Podzol A_2 . I examine hastily the soil developed from sand under the spruce:

A_{00}		Very thin.
A_0	1-0"	Fairly well decomposed brown organic matter.
A_1		Very thin.
A_2	0-1"	Dark gray loamy sand.
B	1-11"	Dark reddish-brown loamy sand.
B_3	11-24"	Transitional
C		Very permeable yellowish sand.

Under the Douglas fir in an adjacent plot the A_{00} is two to three inches thick.

We walk on through the woods. There are many beautiful old beeches. On a considerable slope in the woods, I am asked to identify a soil profile that I name lithosolic Brown Forest from calcareous rocks. Then I am told that Dr. Marbut called this soil a Rendzina in 1935. I cannot understand this at all. I am sure he must have seen a

We get into the bushes about 9:00 for a visit to
 Hagley Wood south of Oxford. First, we look at some
 spruce planted forty years ago. The surface of the
 soil now has a fairly good A₀ and the beginning of a
 Podzol A₂. I examine hastily the soil developed from
 sand under the spruce:

A ₀₀	Very thin.
A ₀	1-0" Fairly well decomposed brown organic matter.
A ₁	Very thin.
A ₂	0-1" Dark gray loamy sand.
B	1-11" Dark reddish-brown loamy sand.
B ₂	11-24" Transitional
C	Very permeable yellowish sand.

Under the Douglas fir in an adjacent plot the A₀₀
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SOILS OF BAGLEY WOOD, Near OXFORD

Rocks. Oxford Clay. Calcareous Grit. Coral Rag.
 Kimmeridge Clay. Capped by Plateau Gravel.

Topography. Low hill site dissected by two small streams
 running from W to E. Altitude varies from
 250 ft. in the S.W. to 260 ft. in the lowest
 valley bottom, rising again to 360 ft. in
 the N.

Soil Genetic Groups.

Brown Forest Soil Brown Earth
Podsol
Gleyed Brown Forest Soil
Rendzina
Degraded Brown Forest Soil
Undifferentiated Alluvium (Muck soils)

The map has been constructed by Miss P. Ross strictly
to the convention of the Soil Survey of England and
Wales during the spring of 1947.

Soil No. 3. Profile Pit 3 . Series 3.

Gen. Group: Rendzina. Type coarse sandy loam. Deep.
Relief: Foot of valley side. 2.5 ft. above water table.
Aspect: S.E.
Drainage. Profile: Imperfect. Site: seasonally wet.
Parent Material: Coral Rag Colluvium.
Vegetation: Oak, Ash, Beech, Spindle, Scilla.

Profile:

- Layer I. 0"-12" Medium reddish brown coarse sandy loam. Crumb, porous and mellow with high org. matter. Stoneless. Good and free root development. This layer merges
- Layer II. 12"-30" Orange brown coarse sandy loam with many colluvial calc. stones sub-angular and laminated. Much mechanical org. matter in old root channels. Roots many but impeded by stones and imperfect drainage at 30" +.
-

Soil No. 4. Profile Pit 4 . Series 4.

Gen. Group: Podsol Slightly Podsolized Type: Sand. Deep.
Relief: Plateau.
Drainage. Profile: Top free, base imperfect. Site: satis.
Parent Material: Complex drift of Plateau Gravel on Kim. Clay.
Vegetation: Conifers, .4 Canopy. Scilla, mosses.

Profile: Layer 0. 3" F. & H. Layers, sharply defined.

- Layer I. 0"-7" Dull dark brown humic sand with very many ash grey sand particles. Few small quartzose stones. Structureless to laminated. Close and mellow. Good root development.

This layer exhibits the typical match box podsol of the slightly podsolised conifer soils.

This layer merges

- Layer II. 7"-22" Dull medium brown-orange sand. Stony with many quartzose pebbles, small cloddy, close and slightly sticky. Very little mechanical org. matter. Few roots. This layer merges

Layer III. 22" + Reddish brown - yellow, stony sand.

Soil No. 5. Profile Pit Series 5.

Gen. Group: Brown Forest Soil B.E. Gleyed. Type: ^S~~La~~ L.B.S. Deep.

Relief: Edge of plateau cap. Aspect N.
Drainage. Profile imperfect. Site: seasonally wet.
Parent Material: Complex Drift over Kim. Clay. 5.
Vegetation: Conifers .4 Canopy. Scilla, mosses.

Profile: Layer 0. 2" F. & H. Layers. Mull. type. merges.

Layer I. 0"-6" Dark brown humic sand speckled with bleached sand grains. Many quartzose pebbles. Granular, porous and loose. High organic content. Many small good roots. Layer well permeable. This layer sharply defined.

Layer II. 6"-12" Whitish grey heavy loam mottled with orange few quartzose pebbles. Cloddy, and tenaceous. Some mechanical org. matter in fissures and old root channels. Few roots. This layer merges

Layer III. 12"-30" + Blue grey clay mottled with orange, gley characters increase with depth. Some quartzose pebbles. Cloddy, fissured and tenaceous.

Soil No. 6. Profile Pit 6 . Series 6.

Gen. Group: Ground Water Gley. Type: Clay. Deep.
Relief: Slight slope on upper part of valley side just below plateau cap i.e. Soil 5 Aspect N.
Drainage. Profile imperfect. Site: seasonally wet.
Parent Material: Calc. Clay (Kimmeridge) and complex drift.
Vegetation: Oak standards cut and cleared, recolonising with ash, birch, privet.

Profile:

Layer I. 0"-5" Dark brown humic clay, stoneless, cloddy fissured and tenaceous. Many roots. This layer merges

Layer II. 5"-15" Brown clay streaked with orange and blue mottles. Few quartzose pebbles. Cloddy fissured and tenaceous. Sparse organic matter. This layer merges

Layer III. 15"-22" Blue greyish brown clay wwith increased gley characters and with MnO_2 concretion. Gley 'structure' fissured and tenaceous. Very little organic matter or roots. This layer merges

Layer IV. 22"-30" + Blue grey clay with $CaCO_3$ concretions. Above the Kimmeridge clay in situ.

Soil No. 7. Profile Pit 7. Series: 'Orange' No. 7.

Gen. Group: Brown Forest Soil. Type: Ib. Deep.

Relief: Gentle valley side slope to N.E.

Drainage. Profile: adequate, free. Site: satis.

Parent Material: Clay. Kimmeridge in situ. (97).

Vegetation: Ash, Hawthorn, Bramble, rose.

Profile:

Layer I. 0"-15" Rich dark orange brown, humic heavy loam. Stoneless, ill-defined crumb, friable and mellow. Organic matter below 4" slowly fades in dark streaks down old fissures. Roots good. This layer merges

Layer II. 15"-30" + Warm reddish orange brown heavy loam. Stoneless well defined, well aerated cloddy, compact in mass and tenaceous. Smears of mechanical organic matter still persist. Many small MnO_2 concretions. Large and well developed roots.

Soil No. 8. Profile Pit 8. Series 8.

Gen. Group: Degraded B.F.S. (Brown Earth). Type: Sand. Deep.
Relief: Plateau.

Drainage. Profile: free. Site: satis.

Parent Material: Complex drift of Plateau Gravel on Kim. Clay.

Vegetation: @ Sessiliflora and bracken. Open canopy.

Profile:

Profile: Layer 0. 3" F. & H. layers.

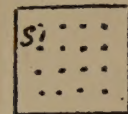
Layer I. 0"-3" Grey brown humic fine sand with many leached grains (degraded). Few small quartzose pebbles. Ill-defined crumb structure (O.M.) porous, friable and mellow. Roots excellent. Layer drainage excessive.
This layer merges

Layer II. 3"-12" Slightly ashy brown loamy sand (degraded). Stoneless, ill-defined cloddy, porous and friable. Little organic matter. Roots excellent. Layer drainage and retention adequate.
This layer merges

Layer III. 12"-24" Orange sand with band of pebbles 12"-14". Fine cloddy porous and friable. Organic matter in old root channels. Roots excellent. Layer drainage and retention adequate.
This layer merges

Layer IV. 24"-30" + Ochreous. Sandy heavy loam, with fully oxidised patches of brown ochre. Stoneless, cloddy and friable. Organic matter in old channels. Roots good. Layer drainage and retention adequate.

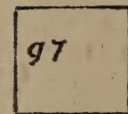
GENETIC GROUP PARENT MATERIAL DEPTH TEXTURE



Sand, calcareous
in situ

D

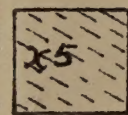
S



Clay & clay
shales, calcareous
in situ

D

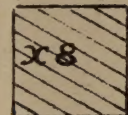
Lb



Complex drifts
fluvial overlying
clay sedimentary

D

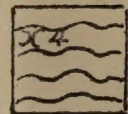
$\frac{S}{Lb}$



"

D

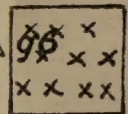
S



"

S

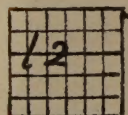
$\frac{S}{\text{plateau gravels}}$



Calcareous clay
in situ with
complex drifts

D

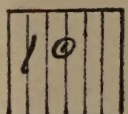
C



Coral rag
in situ

E

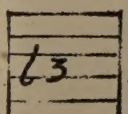
$\frac{Lm}{\text{rock}}$



Coral rag in
situ with
clay drift

S

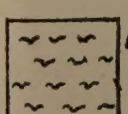
$\frac{Lm}{\text{rock}}$



Coral rag
colluvium

S

$\frac{La}{\text{rock}}$



Undifferentiated
alluvium

PARENT MATERIAL

g. = Clay, calcareous kimmeridge

l = Soft limestone Corallian

S = Sand calcareous "

x = Complex drifts

v = Undifferentiated alluvium

DEPTH

E = < 8"

S = 8" - 15"

D = > 15"

Δ = Profile pit

O = Auger boring

↘ = Direction of Slope

TEXTURE.

S = Sand

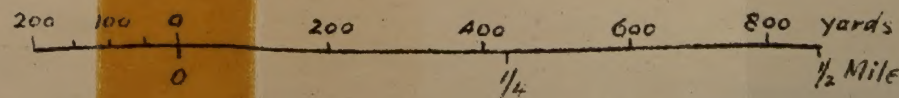
La = Sandy loam

Lm = Medium "

Lb = Heavy "

C = Clay

BAGLEY WOOD
MAY 1947.





SKETCH MAP
OF
BAGLEY WOOD

APPROXIMATE SCALE 12" to 1 mile -
R.F. $\frac{1}{57280}$





K-1569. In Bagley Wood, near Oxford.
Experimental spruce plantings.



K-1570. Bagley Wood. Forest nursery.
Crowther explains.



K-1571. Bagley Wood. Forest nursery.

K-1572. Bagley Wood. Forest nursery.
Growth explained.



K-1572. Bagley Wood. Forest nursery.
Crowther explains.

different place.

We walk through the forest to a series of experimental plots with forest seedlings that are under the direction of Dr. Crowther. He explains to us in considerable detail the treatments and results. Among other things, he is much concerned about the kinds of plants -- including buckwheat, cereals, grasses, and legumes -- that may be used as green manures between plantings of seedlings. For this reason, he has a series of trials with these plants and with the seedlings over a wide range of pH as developed through the use of lime and aluminum sulphate.

He points out that many forest nurseries have difficulty because of excess lime that gets into the plots accidentally. In such instances, he gets good results from sulphuric acid but says that it is hard to handle. He also gets good results from formalin on both old and new nurseries. Basic slag is not good -- not nearly so good as superphosphate. He gets no dramatic results from compost and feels that the resulting benefits are related almost entirely to its nutrient content. The slowly acting forms of nitrogen give considerably better results than quickly soluble forms.

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Mr. G.V. Jacks

Dr. J.P. van Zyl

Professor J. Baeyens

Professor G.E. Blackman

Dr. C.E. Kellogg

THE EARL OF LISTOWEL

Mr. C.G. Stephens

Sir John Russell

Monsieur G. Aubert

Mr. A. Gwynn-Browne

Dr. A. Muir

Dr. D.N. McArthur

Dr. M. Baldwin

Professor F. Hardy

Dr. W.G. Ogg

Dr. C.R. van der Merwe

Dr. Leslie Sutton

Dr. L.I. Grange

Dr. W.J. Arkell

Dr. J.N. Mukherjee

Dr. A.B. Stewart

Monsieur T.W.G. Dames

Dr. D.W. Duthie
Mr. S. McConaghy
Dr. E.M. Chenery
Dr. B.G. Deb
Dr. H.H. Mann
Mr. A.B. Cormack
Dr. P.J. Livens
Dr. H. Vine
Rear-Admiral
Sir Arthur Bromley

3

Mr. N.V. Rounce
Professor Charles Killian
Mr. C.G. Akhurst
Mr. C.G.T. Morison
Dr. James A. Thorp
Dr. G. ap Griffith
Mr. H.W. Dougall
Dr. T.J. Mirchandani
Dr. P.A. Loizides

Mr. A.D. Husband
Dr. J. Lebrun
Dr. T.N. Jewitt
Mr. G.R. Clarke
Dr. J.A. Bonnet
Mr. J.G. Hibbert
Mr. P.H. Nye
Mr. G. Rodrigues

2

Dr. D.A. Osmond
Professor R.L. Pendleton
Mr. G.H. Gethin Jones
Monsieur S. Henin
Dr. T.A. Buckley
Dr. E.M. Crowther
Dr. A. Reifenberg
Mr. E. Williams
Colonel Sir Eric Crankshaw

ENTRANCE

Magdalen College,
Oxford.

23rd June, 1948

Dr. E. E. Kellogg

Ernest Delmonico & Co. Paris, 1874

His Majesty the Emperor of the French
Paris, 1874

Paris, 1874
on Wednesday, the 1st of June, 1874, at 10 o'clock
The Grand Hotel

Minister of the Interior, Paris

Paris, 1874
The Grand Hotel



1874

South African Museum

Australian Museum

"Henry" 1874

1874



To meet Delegates of the Commonwealth Agricultural Bureaux
to the Tropical Soils Conference

His Majesty's Government in the United Kingdom of
Great Britain and Northern Ireland
request the honour of the company of

Dr C. E. Kellogg

at Luncheon at Magdalen College, Oxford
on Wednesday, the 23rd June, 1948, at 1.15 p.m. for 1.30 p.m.

The Earl of Listowel
Minister of State for Colonial Affairs, will preside.

Please reply to: The Secretary, Government
Hospitality, Treasury Chambers, Whitehall,
S.W.1. Tel.: WHI.1481. Ext.538 or Ext.227.



WINES

South African "Witzenburg"

Australian Penfold Burgundy

"Essay" Cognac

Kummel



on Norvégienne

et aux Primeurs
mes du Saison

Glacé Maréchale
etit Fours

Café





Saumon Norvégienne

Poulet aux Primeurs
Légumes du Saison

Bombe Glacé Maréchale
Petit Fours

Café

Magdalen College
Oxford,
23rd June, 1948.

We return to Magdalen College in order to be ready for an official luncheon given by H. M. Government at 1:30. The luncheon is a pleasant affair. The famous and very old Magdalen gold and silver plate is brought out for the occasion. Lord Listowel (The Earl of Listowel), Minister of State for Colonial Affairs in the House of Lords, speaks to welcome the conference. Mr. Stephens of Australia answered for the Commonwealth countries. I reply for the representatives from the foreign countries as follows:

Remarks at hospitality luncheon

My lord and gentlemen: I rise to express in some small measure the great appreciation of your overseas guests to the Commonwealth Agricultural Bureaux. It has been an excellent program. But more than that, you have made us so intimately a part of your own group.

Some of us come from nearby lands with histories of education and research as long as yours. Others of us come from newer countries. Of course our own culture and our ways of life are intimately related to our own soil. We each love the symbols of our antiquity. -- Or do we? Rather, I suggest we love the ideas that these symbols represent. Here we are on firmer ground and,

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Mr. Chairman, I should say on the same ground.

We soil scientists have been fortunate. Only last year many of us were together in Montpellier, Arles, and Nîmes. We felt at home. This summer we are here, in Oxford and in Harpenden. We feel at home. Only two years hence we shall be in Amsterdam. And we shall again be at home, among the things that really count with us.

If you will permit a personal word, Mr. Chairman: I'm sure I've seen the ghosts of my ancestors here -- if not in Oxford, certainly at the pageant in St. Albans last Saturday. When James was crowned the First James of England, my paternal ancestors left Scotland (possibly to make room for the Oggs). Then again they moved -- to Connecticut -- not on that much crowded ship the Mayflower, but 10 years later on another ship.

With my maternal ancestors the record was different. I shouldn't mention it at all except for certain statutes of limitations. They came to the Colonies as officers in the King's army to collect certain taxes on tea. Once there, they decided either that the tax was unjust or that the King didn't

Mr. Chairman, I should say on the same ground,
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 certain statutes of limitation. They came to the
 Colonies as officers in the King's army to collect
 certain taxes on tea. Once there, they decided
 either that the tax was unjust or that the King didn't

really need the money. I don't know which. Anyhow they stayed. (Now, of course, if they had been dealt with justly, and properly hanged as traitors, I shouldn't have had to make this speech!)

Of course we laugh at such things. Oh for the day, Mr. Chairman, when we shall be able to laugh at all the silly and the cruel things done in the name of nations for national pride. But this is not the occasion for discussing the prospects of world peace.

Yet scientists everywhere have an enormous responsibility in the world. And, I believe, soil scientists in particular. Of course, abundant food for all people will not insure peace. Man lives for much else -- both good and bad. But without food, I doubt that there can be peace. While millions fear the very approach of another day, no one is secure for long. This we can count on.

And nowhere are the problems of soil scientists greater or more urgent than in the tropics. For myself, Mr. Chairman, I'm optimistic about prospects in the tropics. I fear that all of us take the great increases in agricultural efficiency in this Island, and elsewhere in the Western World, for granted. A little careful study of the days of work and acres

of land to produce the food for a family one hundred and fifty years ago and now, will show how enormous the change has been. Science has done this. What has been done here can, in my view, be done in the tropics. It will take work, time, and treasure. In short, it will take the earnest application of the scientific method.

It is in the best traditions of British science and British administrative vision that you should have focused our attention on this problem. You have arranged the conference well -- as we expected you would do. Now, as soil scientists, we must explain our needs but not promise too much too soon. Above all, we must get on with our researches while there is still time.

Gentlemen, our hosts, we, your guests, thank you and salute you!

After lunch, Reifenberg decides that he must leave at once to get back before the "official" truce ends in Palestine. This is too bad. I had hoped to buy a copy of the second edition of his book, The Soils of Palestine, which has been published only within the last few days. He offers me his copy, the only one he has, but I refuse.

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and fifty years ago and now, will show how enormous
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in Palestine. This is too bad. I had hoped to buy
a copy of the second edition of his book, The Politics
of Palestine, which has been published only within
the last few days. He offers me his copy, the only
one he has, but I refuse.

I go uptown and make a little tour of several of the large book stores. I have bad luck. Of the several books I had in mind, including Reifenberg's, I do not find a one.

I return to the College about 5:30. Reifenberg has already gone. I find that he has autographed his only copy of his new book and left it in my mailbox. He should not have done this but there is no help for it now.

Although rain has threatened all afternoon the weather has remained fine. The evening is cool -- too cool for comfort. After dinner, I stroll about a bit and then return to my room to read by the little fire. During our stay at Oxford we have had our meals in the regular College dining hall. The dons eat at a head table on a raised platform. They have chairs! The others sit on benches. The waiters are young men dressed in ordinary business suits. When the dons take their places, the students, and that included us when we were eating there, rise and remain standing until the dons are seated. When the meal is finished the Senior Undergraduate sends a scout to the President of the College at the head table who brings the compliments of the Senior Undergraduate and begs that they

I go uptown and make a little tour of several of the large book stores. I have had luck. Of the several books I had in mind, including Belfrage's, I do not find a one.

I return to the College about 5:30. Belfrage has already gone. I find that he has autographed his only copy of his new book and left it in my mailbox. He should not have done this but there is no help for it now.

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may be permitted to leave. Even though the President nods his approval, no one leaves until the scout has returned to the Senior Undergraduate with the message. Then when the Senior Undergraduate rises and leaves, all others may do so, but not until then. Whether this tradition would be followed in case of fire, I do not know.

It will be a long day tomorrow. A little later in the evening, I am invited to the nearby room of Mr. Sutton (an Oxford don) and he, Ogg, Muir, Stephens, and myself have a long informal discussion about the soils of the world as we consume a bit of Scotland's most famous product.

June 24

We leave in the busses about 9:00 with all the baggage since we shall stay tonight at Lyndhurst.

We stop first to see the Frilford series -- acid, sandy soils from calcareous grit. In this place, there is some siliceous limestone in depth. The soil is undulating and well-drained. I should call it a Brown Forest soil, transitional to Brown Podzolic with some features just suggesting Gray-Brown Podzolic. Although Dr. Muir says that the lower hard rock is

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It will be a long day tomorrow. A little later
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Mr. Sutton (an Oxford don) and he, Gey, Miller, Stephens,
and myself have a long informal discussion about the
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most famous product.

June 21

We leave in the bus about 9:00 with all the
baggage since we shall stay tonight at Lyndhurst.
We stop first to see the Ertford series -- solid,
sandy soils from calcareous grit. In this place, there
is some siliceous limestone in depth. The soil is un-
dulating and well-drained. I should call it a Brown
Forest soil, transitional to Brown Podsolle with some
features just suggesting Gray-Brown Podsolle. Al-
though Dr. Miller says that the lower hard rock is



K-1573. South of Oxford. Potatoes on Frilford series -- a Brown Forest, tending toward Brown Forest, tending toward Brown Podzolic. Likely solum developed from sandy layers over calcareous grit.



K-1574. North of Wantage. Excellent pasture on Grove series from glacial wash over Galt clay.

calcareous grit of the Jurassic period, I suspect that the solum is developed from sandy overlayers and not from the rock itself.

- | | | |
|----------------|-------------------|---|
| A _p | 0-7" | Brown to dark brown sandy loam with ill-defined crumb structure. |
| B ₁ | 7-23" | Reddish-brown slightly compact but easily friable, sandy loam. |
| B ₂ | 23-30"
(28-37) | Reddish-brown sandy clay loam; quite hard in place but friable with strong pressure; coarse blocky structure. There is some vertical cracking in both B ₁ and B ₂ . |
| C | (28-37)
plus | Reddish-yellow and reddish-brown banded loamy sand and clayey sand. |

The boundaries between the horizons of the lower solum are non-conforming. There are erratic spots in the profile. The concentration of clay in the B₂ appears to me to be due to the calcium carbonate in the parent material, as I explained in my work on the soils of Wisconsin in the discussion of the shallow Knox.

Adjacent fields have fine potatoes.

We stop next on an excellent pasture of mixed grasses and clover. The soil is the Grove series from glacial wash over Galt clay. Due to some error no pit has been prepared here.

We pass through Wantage where there is a statue of King Alfred, the Great. I had stopped here with

calcareous grit of the Jurassic period, I suggest that

the soil is developed from sandy overlayers and not

from the rock itself.

A₁ 0-7" Brown to dark brown sandy loam with ill-defined crumb structure.

B₁ 7-23" Reddish-brown slightly compact but easily friable, sandy loam.

B₂ 23-30" (28-37) Reddish-brown sandy clay loam; quite hard in place but friable with strong pressure; coarse blocky structure. There is some vertical cracking in both B₁ and B₂.

C (28-37) plus Reddish-yellow and reddish-brown banded loamy sand and clayey sand.

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grasses and clover. The soil is the Grove series from

glacial wash over Galt clay. Due to some error no pit

has been prepared here.

We pass through Waukegan where there is a station

of King Alfred, the Great. I had stopped here with

Marbut, Robinson, and Miss Kay in 1935 when we looked over the soil survey of the Vale of the White Horse.

At the next stop near Wantage, we look at an interesting soil developed from Upper Greensand. The land is nearly level and imperfectly drained. There is now a good cover of mixed pasture grasses. This is called the Ardington series and is probably the greenest soil I have seen. The colors are too green for our standard color chart.

Soil profile sample No. 4

A _p	0-6"	Dark olive gray clay loam. Indistinct granular to massive. Easily friable now when moist.
B ₁	6-8"	Dark olive gray clay loam, indistinctly blocky to massive, firm but fairly easily friable.
B ₂	8-24"	Dark olive green clay loam -- too green for the color chart. The soil is indistinctly blocky with prismatic breaking. It is fairly easily friable and plastic without being sticky.
C	24 plus	Olive green sandy clay -- too green for the color chart. The soil is massive but fairly easily friable. This material has some free calcium carbonate. Roots go to 30 inches.

Marbut, Robinson, and Miss Kay in 1935 when we looked over the soil survey of the Vale of the White Horse. At the next stop near Wantage, we look at an interesting soil developed from Upper Greensand. The land is nearly level and imperfectly drained. There is now a good cover of mixed pasture grasses. This is called the Arlington series and is probably the greenest soil I have seen. The colors are too green for our standard color chart.

Soil profile sample No. 4

A _p	0-6"	Dark olive gray clay loam. Indistinct granular to massive. Easily friable now when moist.
B ₁	6-8"	Dark olive gray clay loam. Indistinct blocky to massive, firm but fairly easily friable.
B ₂	8-24"	Dark olive green clay loam -- too green for the color chart. The soil is indistinctly blocky with plastic breaking. It is fairly easily friable and plastic without being sticky.
C	24 plus	Olive green sandy clay -- too green for the color chart. The soil is massive but fairly easily friable. This material has some free calcium carbonate. Roots go to 30 inches.

A few miles south of Wantage on the chalk of the Berkshire Downs, we see the Terminal series on the rolling upland from Gault. This is a Reading, looking just a bit toward Brown Forest. In the hills are some very seepy spots. I look at the prepared profile hurriedly.



Pastures here are large. The animals are mostly cattle, especially Shorthorns. Rather much of the grass seems coarse in texture.

We pass Shefford and go south, striking into rolling hills. The hills are of the same series as the one we saw at Winchester, or "clay-with-flints", is shown. We are now on an undulating upland of brown forest soil. Here I see a few felled sheep in small groups with pens.

K-1575. South of Wantage. View on Ardington series from greensand.

A few miles south of Wantage on the chalk of the Berkshire Downs, we see the Icrnfield series on the rolling upland from chalk. This is a Rendzina, tending just a bit toward Brown Forest. In the hills one sees many seepy spots. I look at the prepared profile hurriedly.

- A 0-10" Brown clay, mostly granular but with some rounded fine blocky. The surface one inch is very finely granular.
- B 10-20" A mixture of brown sub-angular fine clay and nearly white angular and rounded rock fragments.
- C 20 plus Yellow massive fairly friable clay mottled with white. There are many rock fragments and flints.

We drive on south and southwest through rolling country, largely in grass pastures with some cereals. Pastures here are large. The animals are mostly cattle, especially Shorthorns. Rather much of the grass seems coarse in texture.

We pass Shefford and go south, climbing into rolling country again with Brown Forest soil. There is Winchester, or "clay-with-flints", in places. We are soon on an undulating upland of Brown Forest soil. Here I see a few folded sheep in small movable wooden pens.

A few miles south of Wantage on the chalk of the Berkshire Downs, we see the Icknield series on the rolling upland from chalk. This is a Mendips, trending just a bit toward Brown Forest. In the hills one sees many seepy spots. I look at the prepared profile hurriedly.

- | | | |
|---|---------|--|
| A | 0-10" | Brown clay, mostly granular but with some rounded fine blocky. The surface one inch is very finely granular. |
| B | 10-20" | A mixture of brown sub-angular fine clay and nearly white angular and rounded rock fragments. |
| C | 20 plus | Yellow massive fairly friable clay mottled with white. There are many rock fragments and flints. |

We drive on south and southwest through rolling country, largely in grass pastures with some cereals. Pastures here are large. The animals are mostly cattle, especially Shorthorns. Rather much of the grass seems coarse in texture.

We pass Shefford and go south, climbing into rolling country again with brown forest soil. There is Winchester, or "clay-with-flints", in places. We are soon on an undulating upland of brown forest soil. Here I see a few folded sheep in small wooded pens.

We pass Eddington and go west through Froxfield. We pass through some wasteland without crops, pasture, or good forest. We go on to Marlborough and a little south of there stop to see a soil in an old beech grove developed from clay-with-flints -- the Winchester series. I shouldn't regard this as a very good example of that series. Here the soil is an imperfectly drained Gray-Brown Podzolic.

A₀ and A₁ These are gone from tramping and disturbance.

A₂₀ 0-3" Dark yellowish-brown silt loam slightly platy and easily friable to soft crumb.

A₂₁ 3-10" Strong brown silt loam. The soil is very slightly platy with some very poor medium blocky, and is easily friable.

B₁ 10-15" Strong brown clay loam with sub-angular medium nut structure. It has some mottling with lighter and darker shades. There are some small nearly black concretions.

B₂ 10-24" Mottled reddish-yellow and yellowish-brown clay loam with medium blocky structure. The soil is quite hard when dry and not easily friable.

We pass Eddington and go west through fields.
 We pass through some wasteland without crops, pasture,
 or good forest. We go on to Marlborough and a little
 south of there stop to see a soil in an old beach
 grove developed from clay-with-flints -- the Winchester
 series. I shouldn't regard this as a very good example
 of that series. Here the soil is an imperfectly drained
 Gray-Brown Podsol.

A ₂ and A ₁	These are gone from treading and disturbance.
A ₂₀ 0-3"	Dark yellowish-brown silt loam slightly platy and easily friable to soft crumb.
A ₂₁ 3-10"	Strong brown silt loam. The soil is very slightly platy with some very poor medium blocky, and is easily friable.
B ₁ 10-15"	Strong brown clay loam with sub-angular medium nut struc- ture. It has some mottling with lighter and darker shades. There are some small nearly black concretions.
B ₂ 10-24"	Mottled reddish-yellow and yellowish-brown clay loam with medium blocky structure. The soil is quite hard when dry and not easily friable.

C 24 plus Mottled gray, reddish-brown,
and reddish-yellow heavy clay.
Mostly massive with some
coarse blocky. The soil is
plastic and friable with
difficulty. There are a few
flints.

This site is in a little park that has had much
tramping. The soil has less flints in it than the
Winchester at Rothamsted.

We turn back to Marlborough and have lunch. A
little before 2:00, we are back in the busses again.

South of Marlborough and above Collingbourne
Kingstone, we see at some distance the strip lynchets
that are relics of the old Celtic farming from the early
period of around 450 B. C. to 450 A. D. Superficially
they look like terraces. They apparently resulted from
a long-followed system of plowing in lands. I try some
pictures but they are most too far away.

We go on rather rapidly through Amesbury and out
to Stonehenge to see these old famous remains of what
was apparently an early temple. Most of the soil is
rather rolling. A large part is in pasture. Except
on the spots of Brown Forest soil there are not many
hedges here.

We stop for tea at Old Sarum and visit the old

Sh plus
Mottled gray, reddish-brown,
and reddish-yellow heavy clay.
Mostly massive with some
coarse blocky. The soil is
plastic and friable with
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This site is in a little park that has had much
tramping. The soil has less flints in it than the
Winchester at Rotherhamsted.

We turn back to Marlborough and have lunch. A
little before 2:00, we are back in the bus again.
South of Marlborough and above Colingbourne

Kingstone, we see at some distance the strip of marshes
that are relics of the old Celtic tanning from the early
period of around 450 B.C. to 150 A.D. Superficially
they look like terraces. They apparently resulted from
a long-continued system of plowing in lands. I try some
pictures but they are most too far away.

We go on rather rapidly through Amesbury and out
to Stonehenge to see these old famous remains of what
was apparently an early temple. Most of the soil is
rather rolling. A large part is in pasture. Except
on the slope of Brown Forest soil there are not many
hedges here.

We stop for tea at Old Sarum and visit the old



K-1576. Near Marlborough. Director Ogg.
Large beeches on Winchester soil ("clay-
with-flints").



K-1577. North of Collingbourne Kingston.
Lynchets in far center due to plowing in
pre-Celtic times -- 450 B.C. to 450 A.D.



MINISTRY OF
WORKS

Ancient Monuments and Historic Buildings

STONEHENGE

WILTSHIRE

STONEHENGE is the most famous monument of antiquity in the British Isles. It has been an object of interest from the remote past and many of the theories about its construction, date and purpose have been equally wild and unfounded. For example, there is no evidence that it was either the scene of human sacrifice or a Druid Temple.

Two ancient races have left evidence of their presence at Stonehenge. One was a Megalithic race which, during the late Stone Age about 2500 B.C. or later, erected huge stones singly or in circles as part of their religious ceremonial. These people reached the north, west and south coasts of Britain from France, Spain and Portugal. Some of them seem to have settled in Pembrokeshire, erecting sacred circles of stones in the Prescelley Hills and at a probably much later date emigrated to Salisbury Plain, it may be by sea as far as the mouth of the Wiltshire Avon, bringing their sacred stones with them and re-erecting them at Stonehenge in conjunction with other circles of stones of local origin. The other race was the Beaker Folk, so called from their characteristic earthenware drinking cups, who from about 2000 B.C. spread westward from the Rhinelands over this country. There is much evidence that they used the site and inhabited large areas in the immediate neighbourhood.

Stonehenge is also noted for the number of barrows nearby. Two long barrows have been recorded

and some three hundred round barrows, the majority containing cremation burials.

The stones are mainly: (1) Sarsen stones, large flat slabs of sandstone found in Wiltshire and sometimes called "greywethers"; (2) Prescelley stones or "bluestones," crystalline masses which are proved to have been brought from the Prescelley Hills in Pembrokeshire. The former were shaped where they were found, but the latter on the site itself, as shown by the large number of chips.

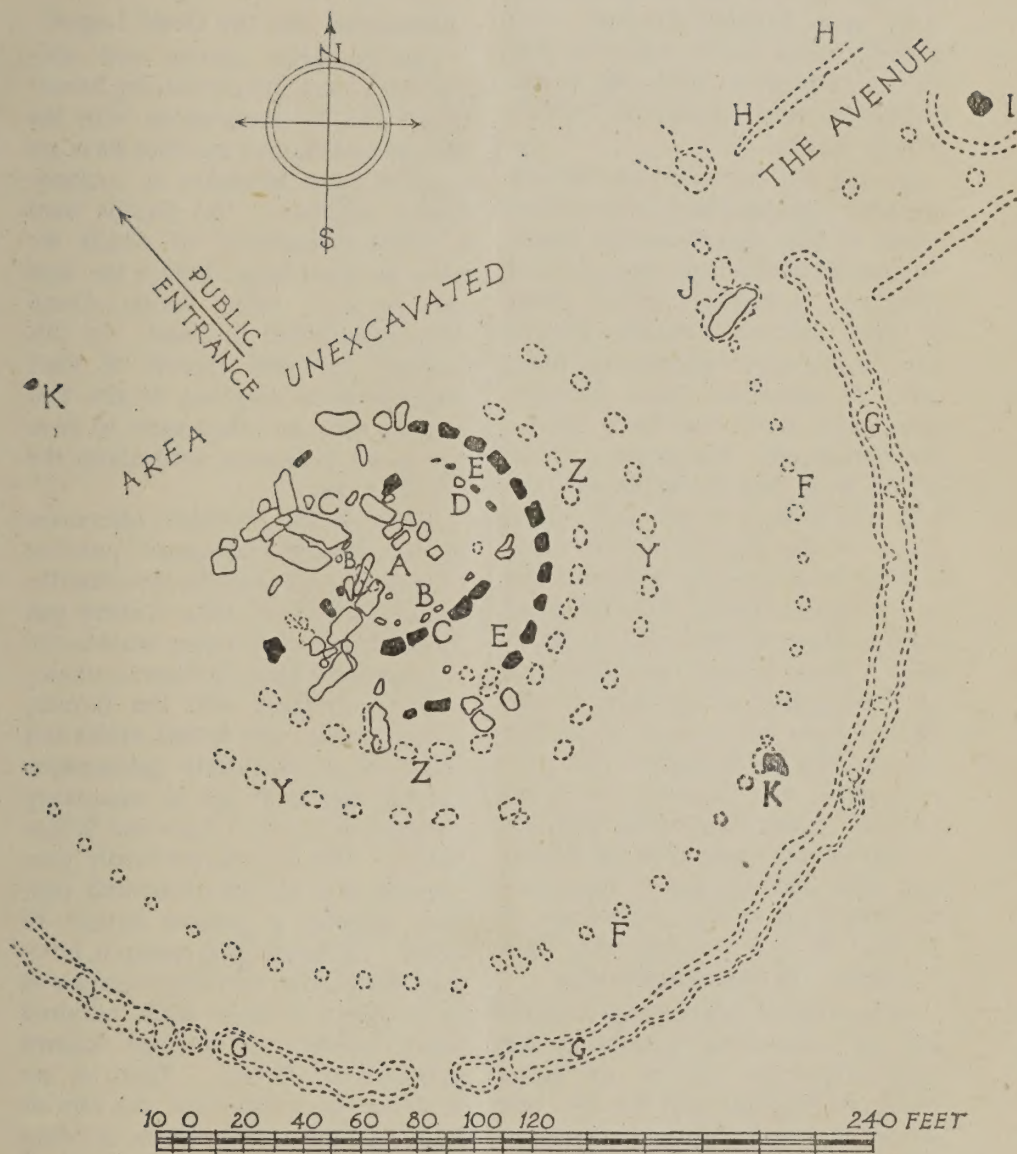
The visitor should start from the centre of the circles at the stone incorrectly called the "Altar Stone" (A) by Inigo Jones in the seventeenth century. It is of micaceous sandstone and was probably acquired by the migrating party near Milford Haven in the course of their journey. It is 16 feet long and lies flat under the fragments of a fallen upright. The main axis of the circles, north-east and south-west, passes through it. Around (A) was a horseshoe (B) of nineteen Prescelley stones 6 feet to 8 feet in height, of which twelve, including stumps, remain. These stood in front of another horseshoe (C) of five separate trilithons, each composed of two Sarsen uprights with a lintel stone fixed across them by a mortice and tenon joint. Two trilithons to the south and east are still standing. The great central trilithon was 22 feet high; it is said to have fallen about A.D. 1620. One of its uprights fell across the Altar Stone and broke; the other was dragged forward out of

position but has since been straightened. The boss of untrimmed stone on its base was left to add to its stability. One upright of the northern pair remains. The lintel stones average 16 feet in length; they are wider in the upper than in the lower surface, and the inner surface is shaped to a curve. Next comes a circle (D) of upright Prescelley stones, now eighteen, but originally forty to fifty in number, 9 feet to 10 feet high and about $2\frac{1}{2}$ feet wide. Outside (D) was a circle (E) of thirty upright Sarsens with a lintel stone reaching from the middle point of each stone to the middle point of the next. These lintels were fixed to the uprights by mortice and tenon joints and to one another by tongue and groove joints. Five of the uprights have disappeared and nine have fallen. The inner edges of the lintels were curved to form a circle. Outside (E) are three irregular circles of holes, the Z, Y and Aubrey holes (F), the latter so-called because they were first recorded by John Aubrey in 1666. These holes held, or were intended to hold, wood or stone uprights. Cremation burials have been found in some of them, although the exact object and date of each series is not known. The position of the last is marked in white chalk. The outermost circle (G) is an earthwork 300 feet in diameter consisting of a ditch with a mound on its inner side and having a causeway across it on the south and north-east. Leading up to the latter is the Avenue (H) bounded on each side by an earthen bank and a ditch. It is 71 feet wide and has been traced to the north-east for 500 yards before it divides into two branches. It may have been a ceremonial approach to the circles. In the Avenue stands a stone called the Friar's Heel or Hele Stone (I), the name being derived from a

legend connecting it with the devil, who is said to have brought all the big stones from Ireland. This legend in some measure confirms the suggestion that some of the stones were transported by sea. It stands 16 feet high and is 256 feet from the Altar Stone (A) and slightly south of the main north-east—south-west axis. The sun rises over it on Midsummer Day when viewed from the centre of the circle. Another stone, the Slaughter Stone (J) lies just south of the axis inside the earthwork. It probably once stood erect opposite a similar stone to the north of it, the pair forming the uprights of a trilithon. There is no evidence that it was used for sacrifice. On a line passing through the centre of the stone circles are two stones, one to the north-west and the other to the south-east (KK). Their significance is not known.

The Prescelley stones were probably dragged along a trackway to Haverfordwest or Narberth, and from there by water to Milford Haven and then by sea to the mouth of the Salisbury Avon. Owing to their weight, the transport of the Sarsen stones must have called for great skill. They could have been brought across country only on some form of sledge. This would have been a long and difficult undertaking in those primitive times, but labour would have been plentiful and the sacred nature of the work a great stimulus.

So far no traces of metal tools have been found; those used for the cutting and shaping of the stones were of flint, Prescelley or Sarsen stone, while the holes were dug with picks made from the antlers of the red deer. Excavation has shown that the uprights were carefully and accurately set. A roomy hole was dug with an incline leading down to it along which the stone was slid, and when in position it was secured



- | | | | |
|---|--------------------------------|---|-------------------|
| A | ALTAR STONE | F | AUBREY HOLES |
| B | HORSESHOE OF PRESCELLEY STONES | G | OUTERMOST CIRCLE. |
| C | " " TRILITHONS | H | AVENUE |
| D | CIRCLE OF PRESCELLEY STONES | I | HELE STONE |
| E | " " SARSENS | J | SLAUGHTER STONE |

Note : Standing stones shown in black.
 Fallen " " " outline.

with wooden stakes and stone packing blocks. The cutting of the joints and the fitting of the lintels on the uprights was a most accurate and skilful piece of work. Some of the lintels were found on the ground and replaced later in their original positions, and Colonel Hawley, who undertook the work, reported that the joints fitted so well that it was difficult to return the lintels to their former places.

Among objects found on the site are axes, hammers and other implements of flint and Prescelley stone, fragments of Beaker pottery of about 1800 B.C., a bronze awl of about 500 B.C., part of a Middle Bronze Age incense cup, a Bronze Age mace head of imported stone, perhaps ceremonial, bone pins from cremation burials, etc. The greater number of the finds date from between the Late Neolithic and the Early Iron Ages. Antler picks similar to those used at Stonehenge have been found in the Beaker period flint mines at Easton Downs, north-east of Salisbury. These mines have yielded not only fragments of pottery of the Beaker Age, but also of an earlier type known as Windmill Hill pottery which can be dated to about 2000 B.C. The date of the building of Stonehenge may thus be placed at a time when the use of stone was contemporary with a partial use of bronze, that is to say, the Late Neolithic and Early Bronze Age.

In conclusion, Stonehenge is probably the latest and is certainly the most elaborate system of stone circles in England, and the only one containing stones brought from so great a distance as one hundred and eighty miles. The arrangement of

stones in a horseshoe is most uncommon, and the careful squaring and dressing of the stones and the provision of mortice-and-tenon and tongue-and-groove joints make it the most finished example of all Megalithic circles.

Stonehenge and the Druid Legend

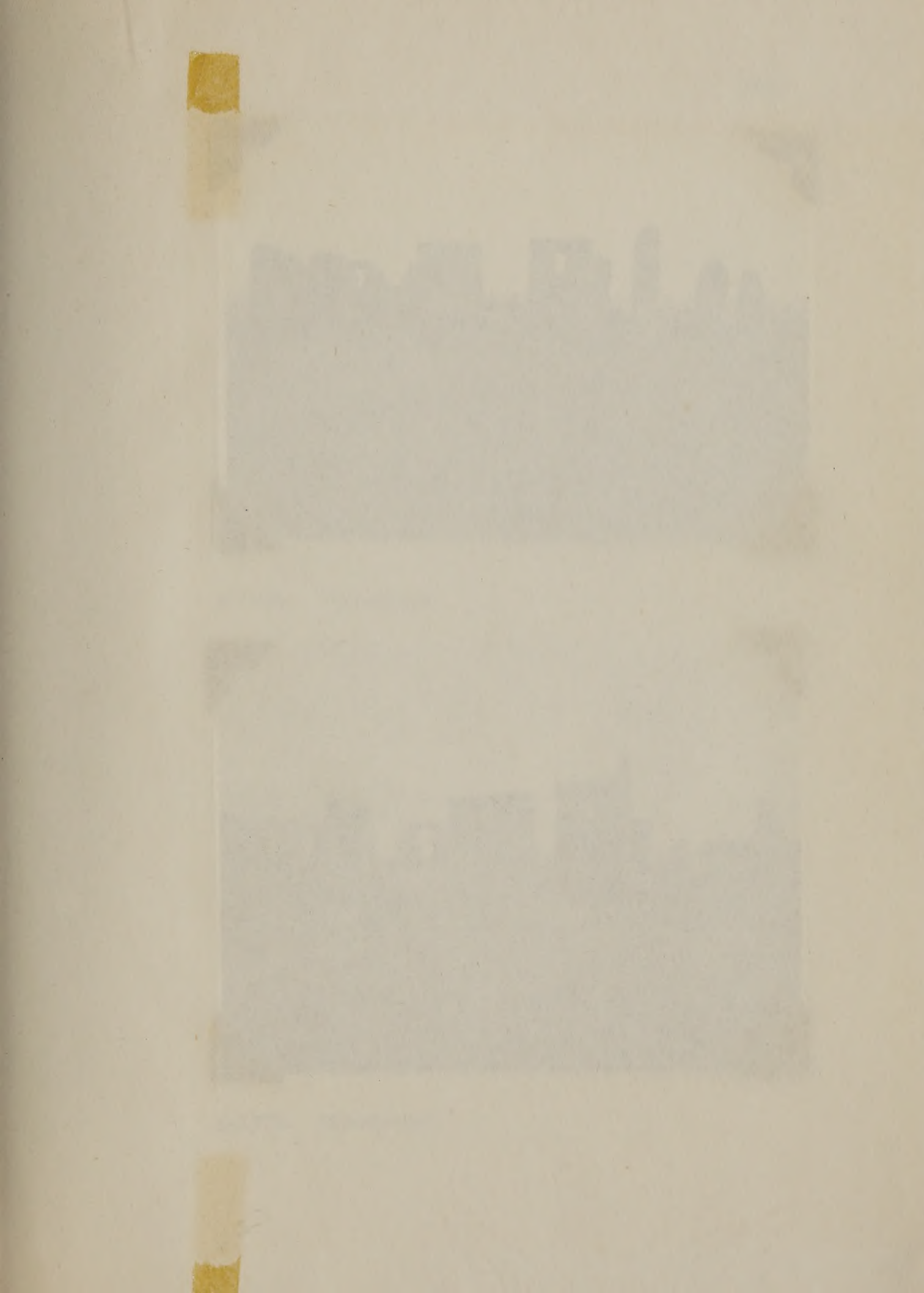
The persistent stories and considerable literature concerning Stonehenge and its connections with the Druids and human sacrifice have no support from historical or archaeological evidence. The Druids were a Celtic priesthood of which we have no knowledge before the first century B.C., when Cæsar found them established in Gaul. In this country the first record of their presence is in Anglesey in the first century A.D., and they seem to have continued in Britain until about the fourth century.

None of the historical references to Stonehenge mentioned possible Druidic origins until the seventeenth-century antiquary John Aubrey put forward such claims very tentatively. A generation later, William Stukeley became obsessed with the Druids, provided them with beliefs, ethics and ritual of a singularly picturesque nature, and built up an imaginary connection between them and Stonehenge. This was industriously propagated and in the nineteenth century became a general article of belief. Archaeological research, however, has proved that Stonehenge was in existence at least eight hundred years before the earliest known existence of Druids. There is no evidence, therefore, that the Druids had any connection with the building of Stonehenge or that it was used by them at any later date.

This Guide is a condensed version of the larger Illustrated Guide (price 6d.) which is not available at present.

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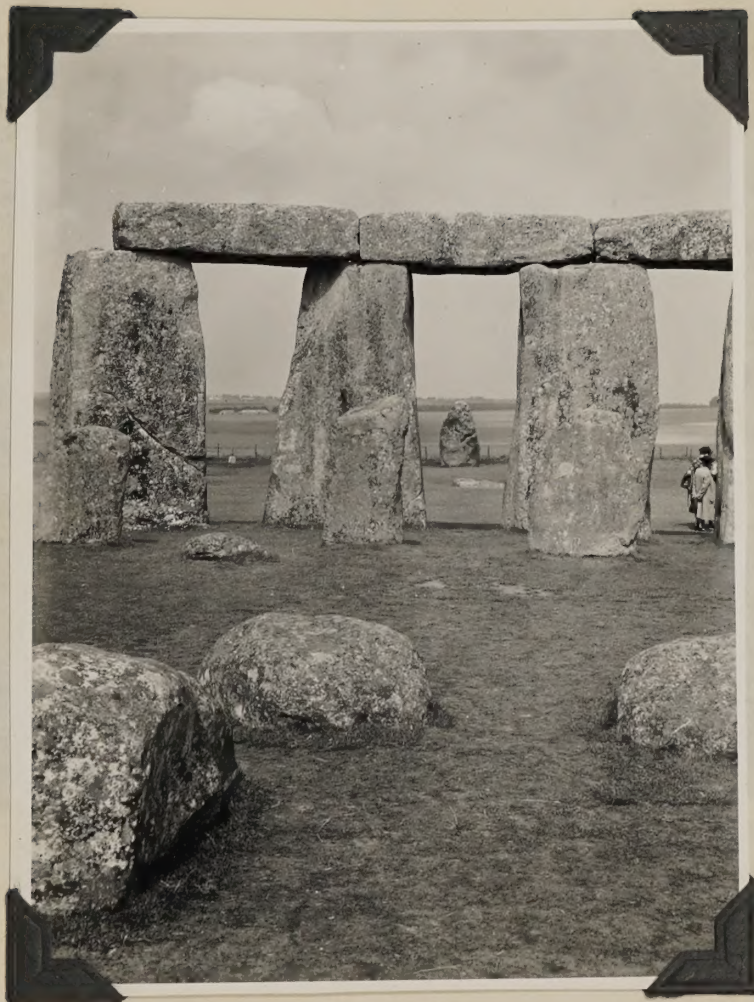




K-1578. Stonehenge.



K-1579. Stonehenge. *Take stone, directly
in line with stone on June 22 from
center (2000).*



K-1580. Stonehenge. Hele stone, directly in line with rising sun on June 21 from center (camera).



K-1581. Old Sarum. View of ruins.



K-1582. Salisubry Cathedral.



K-1583. Salisbury Cathedral.
Another view of right side.

fort, built before the time of Julius Caesar. This fort on a high hill was fortified in subsequent times. Even some block houses for machine guns were built as a defense precaution in World War II.

It is now getting quite late but we stop for a moment to see the famous cathedral at Salisbury. Then we drive on directly to Lyndhurst, a few miles southwest of Southampton. Some of us stay in the guest house (Northerwood House) of the Forestry Commission. This is a fine old manor house with a beautiful English park and garden. It was donated to the Commission. It has many exotic trees and other plants, including some large and gorgeous rhododendrons.

We arrive about 6:45. After dinner, I take a little walk through the garden, do a little writing, and get early to bed.

June 25

I am up at 7:00. The sky looks gray and rainy as we go down to breakfast. We leave at 9:15 in the busses on the road west toward Ringwood through the New Forest (really, this is one of the oldest forests in all England).

We examine a place where a German bomb dropped in the forest February 21, 1941. The pit was filled to make

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the land level. It is curious that this area has
an exceedingly thick vegetation with Douglas fir,
Scott pine, Norway pine, Norway spruce, and so on.
No one is sure why these seeds grew so well -- whether
the effects were wholly mechanical or whether there
was also some chemical influence.



gravel and dirt. A few small areas have deeper soils.

We pass Kingswood and make a stop in the forest.
We leave the horses and get into some military trucks
to go back to some new forest plantings. It begins

K-1584. New Forest. Reproduction
following explosion of German bomb.
will be included with the Barabara series -- a well
developed human Ground-Water Petrol.

the land level. It is curious that this area now has an exceedingly thick regeneration with Douglas fir, Scots pine, Weymoth pine, Norway spruce, and so on. No one is sure why these seeds grew so well -- whether the effects were wholly mechanical or whether there was also some chemical influence.

The soil here is the Southhampton series, said to be a humus Podzol. If so, the pit was far too shallow. The A_{00} is very thin. The A_0 is about 2" thick. The A_1 is about 2" of brownish-gray gravelly loam fading into the brownish-gray loose cherty gravel of the A_2 .

We go on west through much open wasteland that is practically barren of trees. Superficially, the land resembles the burned sand plains of the northern Lake States. Obviously, there is a serious fire hazard. Much of the soil is a thin lithosolic Podzol from gravel and chert. A few small areas have deeper sola.

We pass Ringwood and make a stop in the forest. We leave the busses and get into some military trucks to go back to some new forest plantings. It begins to rain gently (but firmly). First, I look at the soil included with the Bursledoⁿ series -- a well developed humus Ground-Water Podzol.

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We pass Ringwood and make a stop in the forest. We leave the buses and get into some military trucks to go back to some new forest plantings. It begins to rain gently (but firmly). First, I look at the soil included with the Burnside series -- a well developed humus Ground-Water Podzol.

A _{oo}		Very thin.
A _o	1"-0	Reddish-brown peaty turf with some sand in it.
A ₁	0-3" (2-4)	Dark Reddish-gray loamy sand. Contains considerable organic matter in light soft granuals.
A ₂	3-20" (8-25)	Light brownish-gray, single grain sand.
B ₂₀	20(8-25) -28	Nearly black loamy sand, slightly granular.
B ₂₁	28-29"	Mottled light and dark grayish-brown loamy sand with some gravel and some clay.
G-C		Sand with some clay, streaked and mottled with gray and reddish-yellow.

The land is gently undulating. At the present time, the water table stands at 48". The cover consists of heath, lichens, bracken fern, and a few small pines. Obviously, the soil is very acid. The boundary between A₂ and B₂₀ is exceedingly irregular, whereas the B₂₁ is more nearly parallel with the water table and has some suggestion of ortstein.

Nearby, on slightly higher land with similar soil are many forest seedlings of Scots pine, Sitka spruce, and other sorts of conifers put out under experimental conditions. Dr. Crowther has here some complicated factorial experiments with various combinations of nitrogen, phosphorus, and potash with different carriers. Then the fertilizer was varied in the nursery,



K-1585. New forest. Burledoⁿ series -- a
Ground-Water Podzol (humus) from Bagshot sands.
Profile.



K-1586. New forest. Bursledo series -- a Ground-Water Podzol (humus) from Bagshot sands. Landscape.



K-1587. New forest. Experimental plantings of conifers with various fertilizers on Ground-Water Podzol.

is the living-wood side, and here is the field. Thus
we can have an immediate check on our plantings.

At this stage, there can be no question whether
but what the natural seedlings are much better than the
unshaded ones. Gypsum was also used but so far shows
no special advantage.



even when though people are given outright grants
by the Government of ten pounds per acre for forest
planting.

K-1615. New forest plantings under experi-
mental conditions on Podzol. Scots pine,
Sitka spruce, etc.

I am afraid this short note will "live" as best for
several days.

We drive on to some other nursery experiments on

in the lining-out beds, and here in the field. Thus one can have an enormous number of combinations.

At this stage, there can be no question whatever but what the manured seedlings are much better than the unmanured ones. Compost was also used but so far shows no special advantage.

To prepare for planting the land was plowed deeply by heavy steel plows. Thus the ridges have a double thickness of the heather turf, in which the young seedlings are put. They are generally planted a little on one side of the ridge and the fertilizer is applied individually.

Ordinary forest planting in this area is said to cost thirty pounds per acre but with this deep plowing of the heath land, the cost runs up to forty-five pounds per acre. This is too much for the private owner even though owners are given outright grants by the Government of ten pounds per acre for forest planting.

We climb into the trucks and return to the busses. I am afraid this short ride will "fix" my back for several days.

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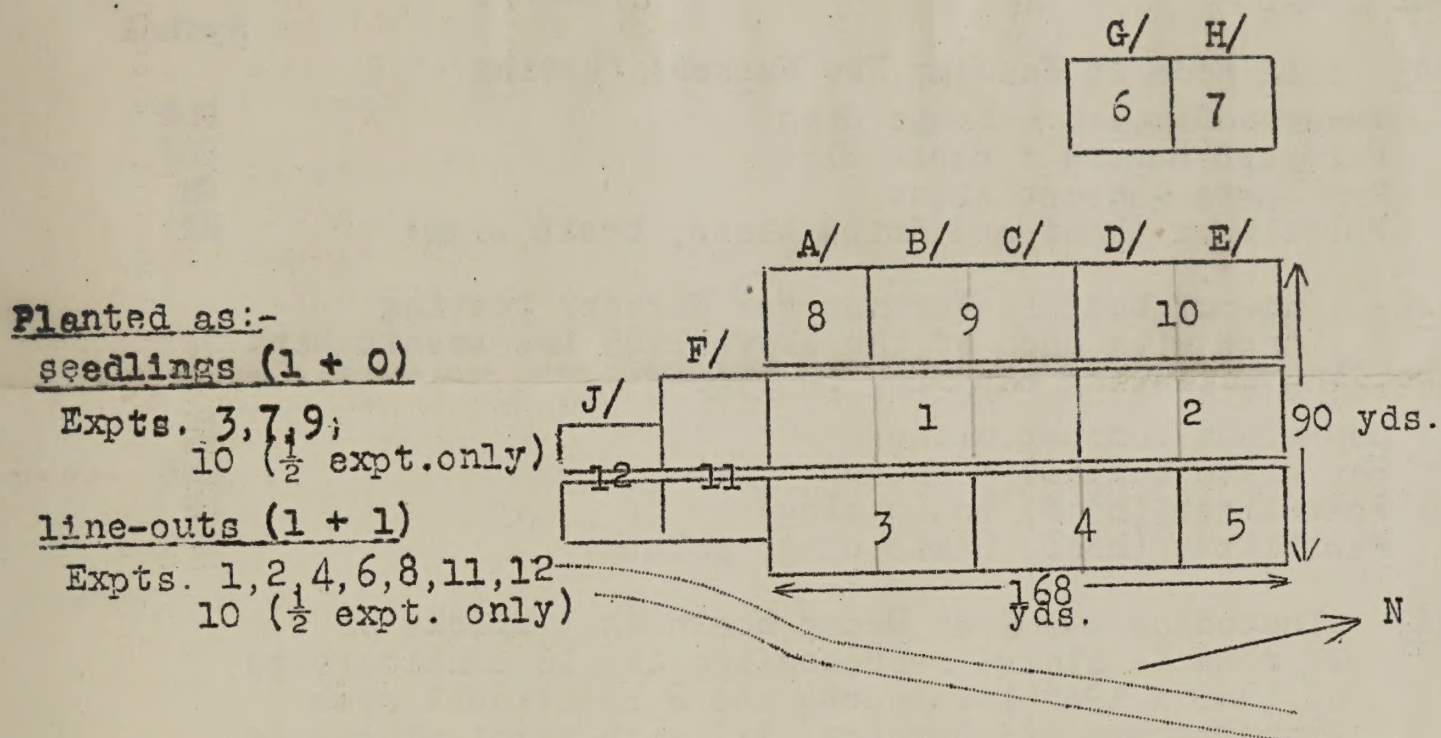
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COMMITTEE ON NUTRITION PROBLEMS IN FOREST NURSERIES

DECOY HEATH (Dh)

Experiments 1 - 4 Planted in 1947
Experiment 5 Sown in situ 1947, partly resown 1948
Experiments 6 - 12 Planted in 1948

All plants from Sugar Hill Nursery, Wareham
(Wo Old Nursery, Wn New Nursery)
(S seedbed, L line-outs, F forest)

Individual row labels show only differential manurial treatments to seedlings, transplants or planted trees. Most experiments received basal uniform manuring in non-experimental years.

Split-row treatments for nitrogen and potash are marked with coloured stakes on parts of certain experiments only
(white for no split treatment, green for N, red for K)

Unmanured Observation Rows marked in yellow.

Glossary

Cb bracken compost
Cbh bracken and hop waste compost
Cd farmyard manure
Ch hop waste compost

Dpm dried poultry manure
H fresh hop waste
S sewage sludge

Compounds	N	P ₂ O ₅	K ₂ O
Fn3	6	11	0
Fn4	4	14	0
Fn6	6	8	6
Fc	13	14	12

Nc Nitrochalk
Nf formalised casein
Nh hoof
Pa ammonium phosphate
Pb basic slag
Pd dicalcium phosphate
Pg Gafsa rock phosphate
Pm bone meal
Ps superphosphate

Kc potassium chloride
Ab applied broadcast
An applied notched

Dh 1

This experiment has been chosen to illustrate the method of experimentation followed in this series. Experiments Dh 2 - 12 are of simpler design in that they have factorial tests in one year only.

Symbol

1945 seed beds in Wareham New Nursery testing:-

Bracken Compost + Basic Slag	CbP
Farmyard Manure + Basic Slag	CdP
Hop Waste Compost alone	Ch
Fertilizer (hoof and dried blood, basic slag)	NP

1946 line-out beds in Wareham New Nursery testing plants with each of the above 1945 treatments with the following manuring in 1946

Hop waste compost alone	Ch
Hop waste compost + potash	ChK
Fertilizer (hoof, basic slag)	NP
Fertilizer (hoof, basic slag, potash)	NPK

1947 planted as 1 + 1 at Decoy Heath in 3 blocks of 18 rows (= plots) representing the 16 combinations of 1945 x 1946 treatments and 2 additional rows from Wareham Old Nursery. All with basal phosphate (Pg)

Each row split into quarters testing:-

No fertilizer	-
Hoof	N
Potash	K
Hoof + Potash	NK

SITKA SPRUCE, ASSESSMENTS 1945 TO 1947

Height in inches of 1 + 0 seedlings, 1945

CbP	3.8
CdP	3.3
Ch	2.6
NP	1.8
Mean	2.9

Height in inches of 1 + 1 transplants, 1946

<u>1945 treatments</u>	<u>1946 treatments</u>				
	Ch	ChK	NP	NPK	Mean
CbP	6.2	6.3	8.3	12.6	7.2
CdP	5.3	5.5	8.1	12.0	8.4
Ch	5.6	5.5	5.6	11.9	7.7
NP	4.6	5.7	4.7	10.0	6.2
Mean	5.4	5.8	6.7	11.6	7.4

Growth in Forest, 1947

Shoot growth in inches, Diameter increment in mm.

<u>1945 treatments</u>	<u>Shoot</u>	<u>1946 treatments</u>	<u>Shoot</u>	<u>1947 treatments</u>	<u>Shoot</u>	<u>Diameter</u>
CbP	1.8	Ch	2.0	-	1.7	0.7
CdP	1.7	ChK	1.9	N	1.9	1.9
Ch	1.9	NP	1.6	-	1.8	1.3
NP	1.9	NPK	1.8	K	1.8	1.3

the Shirrell Heath series. ^{1/} The soil is very acid -- pH 3.5 to 4.0. All seedlings not receiving phosphates make very poor growth and show characteristic phosphorus deficiency.

The soil is nearly level and somewhat imperfectly drained. It is a Ground-Water Podzol with high humus in the B. It suggests the Ogemaw, except for the higher humus content in the B. The wild vegetation is mostly heath. The profile may be described generally as follows:

A ₀₀		Very thin.
A ₀	1"-0	Reddish-brown to nearly black organic matter.
A ₁	0-1 $\frac{1}{2}$ "	Dark gray loamy sand.
A ₂	1 $\frac{1}{2}$ "-13" (12-18)	Light brownish-gray loamy sand.
B ₁	13-15"	(Varies in thickness from 2-6") Very dark brown loamy sand, rich in humus. Irregular tongues extend down three or four feet.
B ₂		A very thin discontinuous hard layer about 1/8" to 1/4" thick. Dark reddish-brown color.
C	15 plus	Yellow sandy loam to sandy clay. Texture varies in spots and streaks. Mottled with light gray, reddish-yellow and reddish-brown.

^{1/} Said to be described in the Hampshire-Strawberry Soil Survey published by Reading University.

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A ₁	0-1½" Dark gray loamy sand.
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B ₁	13-15" (Varies in thickness from 2-6") Very dark brown loamy sand, rich in humus. Irregular tongues extend down three or four feet.
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C	15 plus Yellow sandy loam to sandy clay. Texture varies in spots and streaks. Mottled with light gray, reddish- yellow and reddish-brown.

We have lunch at Wareham and then go back on the road to Ringwood.

On the way, we stop to look at some pasture developments of the County Agricultural Committee on previously uncultivated land with common grazing rights. Under the special war powers of the government during the war they were able to enclose it. They used about ten tons to the acre of chalk and about 700 pounds of superphosphate. Even after the chalk treatment, the soil is still very acid -- about pH 4.8. This is a hard soil to classify. It has the vegetation, relief, and drainage of a Ground-Water Podzol. But it lacks the B horizon. It should probably need to be called some kind of acid Half-Bog although now it resembles a Wiesenboden.

Following the first plowing the land was kept in cultivated crops or fallow for three years and then seeded to pasture. Where not enclosed, the cattle come immediately to these new seedling pastures and destroy them. In the initial seeding, they also use 100 pounds to the acre each of muriate of potash and ammonium sulphate. We look at two of these treated fields that appear to be well-established now; but as I understand it, the present law does not permit the

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K-1588. New forest. Pasture developed on common land. Soil acid Half-Bog with heath. Used 10 tons chalk per acre and phosphate.



K-1589. New forest. Newly established pasture on slightly higher ground than previous photo.

essential enclosing. Members of the Committee ask me for suggestions of a good pasture grass that will stand any amount of overgrazing. Of course, I explain that everybody should like to have the answer to that one. It seems curious to me that with a Labour Government in power it is found to be impracticable to ask Parliament to pass, what would appear to us to be, a rather simple zoning ordinance that would permit the proper handling of these commons. Enormously improved pastures could be developed on a wide area, which would make a substantial contribution to the food supply. But these old land rights are apparently extremely difficult to change. Here in the New Forest cattle roam everywhere. On the way back to our quarters, we stop for a moment to look at a field of seed flax (which the English call linseed) put in by the Agricultural Committee on common land. In this way, England has been able to reduce her imports of flax seed.

These agricultural committees have used directly a lot of the common land. In Harpenden for example there is a big commons. For years, it was covered mostly with gorse. Sir John Russell had pointed to this land for years as an example of non-arable soil.

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But some of the members of the committee had not read Sir John's books. So they cleaned off the gorse and have been growing excellent crops of potatoes and wheat during the war. I passed this area on the way to St. Albans and saw an excellent stand of wheat.

We return to Northerwood House for late tea. After tea, we have a final session to discuss and dispose of the reports of the two committees of the tropical soil conference.

I shall make no attempt to outline these reports in detail here since they will be included in the Proceedings of the Conference.

This is a long session and I have a late dinner and go almost directly to bed.

June 26

I am up early and leave Northerwood House at 8:30 in a bus for Brockenhurst. Here we get the train to London at 9:30.

I talk with some of the English about definitions. They tell me that downs are rolling chalk hills with grass; but now the name is also applied to such land that has been recently cultivated. A "down" is also used to mean a little local hill. Thus one may walk

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up the "down".

"Weald" refers to forested clay plains. "Wold" refers to forested Jurassic uplands, like the Cotswolds.

We reach Waterloo Station at 12:07 noon and I go immediately to the St. Pancras Station. Officially, the government hospitality ceased when we reached London at the end of our excursion.

I go back to Harpenden and stay at the Railway Inn. Most of the afternoon I spend with Stephens of Australia. He was much impressed with his recent tour in America.

In the evening, I have dinner with the Ogg's and we discuss the arrangements for the prospective visit of Dr. Muir to the United States. We hope he can spend about three or four months beginning with the annual conference of the Division of Soil Survey next March.

June 27

This Sunday I spend mostly in reading and writing. I sort out my baggage and get that which I had left with Dr. Crowther. Preparations are made for a short field trip in the west of England. Again I spend the evening with the Ogg's.

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June 28

I am up early to leave Harpenden at 8:00. I arrive in London at 8:40 and go directly to the Athenaeum Court. I plan to get back here late in the evening, June 30 and leave early in the morning July 2. I leave some laundry and most of my clothing so that I can travel light on the field trip. After these arrangements, I go to Paddington Station and take the train to Bristol at 10:45 along with Dr. Muir and Dr. Pendleton.

We reach Bristol at 1:40. After checking in at the Royal Hotel, we go directly to the Long Ashton Station. Professor Wallace and his assistants show us a great many experiments with nutrient deficiencies and excesses of some of the minor nutrients under very carefully controlled conditions. The pots, the sand in the pots, and the chemicals are rigorously treated to eliminate any contamination. They have shown conclusively that molybdenum is essential for many plants besides clover. They are working out the reciprocal effects of things like excess manganese on iron deficiency and many other relationships.

We also see their chemical section. They make good use of Morgan's quick tests on plants but do not

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K-1590. Bristol. War II damage in heart of city.



K-1591. Bristol. War II damage in heart of city.



K-1616. Long Ashton Station. View in greenhouse of plants grown in very pure culture to bring out symptoms of nutrient deficiencies.

find them useful for soils. They use three grams of plant tissue weighed on the platform of a hydrometer. The tissue is finely cut and dissolved for fifteen minutes in a mixture of glacial acetic acid and sodium acetate. The pH of the extract is about 4.8. Five millilitres are used for the chemical test. Cobaltic nitrate is used for potassium, titan yellow is used for magnesium, ammonium oxalate for calcium, molybdate for phosphate, and phenol disulphonic acid for nitrate. They also test for excess manganese with formaldehyde and for manganese deficiency with Morgan's reagent.

They have found that excess zinc greatly aggravates iron deficiency. Plants with an excess of zinc may actually contain sufficient iron but somehow the iron does not perform its function and the plants show evidence of extreme iron deficiency.

Their chemical results correlate well with the foliar symptoms; and also well with ash analyses within the ranges where one gets nutrient deficiencies that can be detected with ash analyses.

Professor Wallace gives me some mimeographed summaries of these tests. A second edition of his book on The diagnosis of mineral deficiencies in plants by visual symptoms is now in press.

After these lectures we go over to Professor Wallace's home for tea. He has a nice house that was built just before the war and escaped bomb hits even though one was exceedingly close. He has a lovely garden.

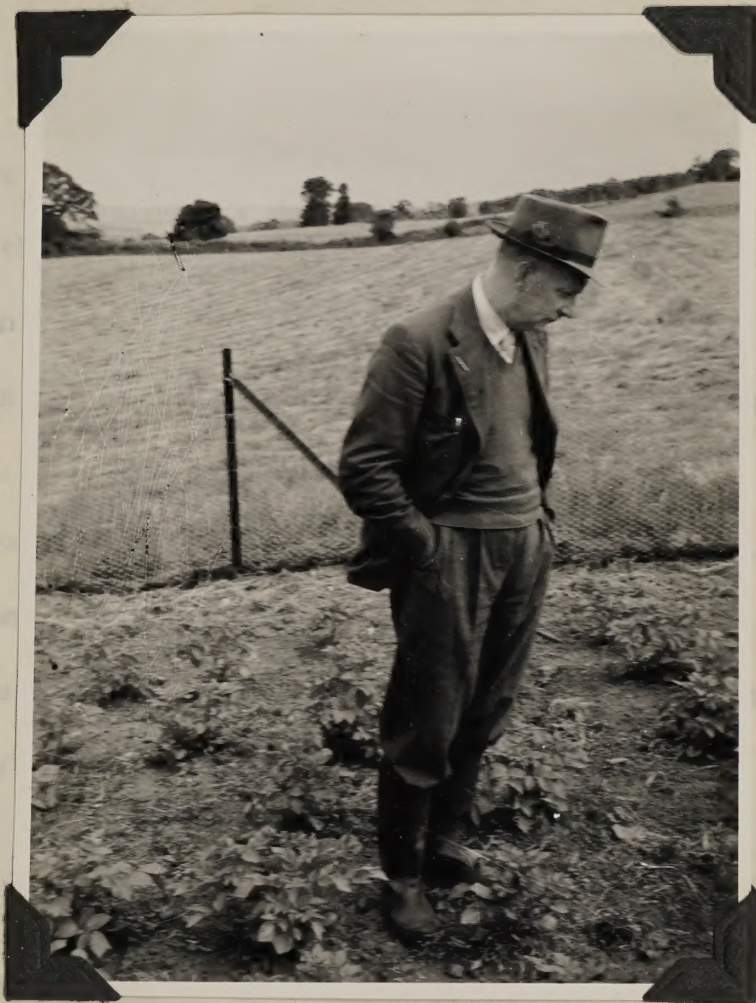
After dinner in the hotel, I go almost immediately to bed, partly because it is the only warm place.

June 29

I am up early for a walk in the city before breakfast. A great deal of the central part of Bristol was destroyed by German bombs. The situation must have been dreadful beyond words. Many thousands of civilians were killed outright or burned to death.

After breakfast, we drive out to the Long Ashton Station and see some field plots nearby. These are on the Nibley soils developed from non-calcareous grit in the coal measures. The surface soil is a reddish-brown fine sandy loam of the Brown Forest group. The solum is about 18" to 24" deep to the rock. The pH is about 4.5 to 5.0.

They have trials with calcium carbonate, magnesium carbonate plus calcium carbonate, and calcium sulphate. These plots are not in good shape. Weeding was postponed



K-1592. Long Ashton Station. On field plots.
Nibley soil. Professor Wallace.

too long and they are now very weedy indeed, especially with sheep's sorrel.

We look at another series of plots on similar soil only just broken out of the bracken and other wild plants after a long rest. Here magnesium carbonate gives the best result.

We drive on. I look at a lithosolic Brown Forest soil called the Lulsgate series. The A_p has 6" of dark reddish-brown granular clay loam over a stony B_3 that merges into a mixture of brown soil and limestone fragments at 12". Much of this soil is nearly wasteland except for poor sheep pastures. This is a great pity. It has been well established that with a little lime and phosphate good leys may be had. The present cover is now mostly bracken, brambles, thorny shrubs, and poor grass.

I look at another soil nearby that seems to be unnamed. Below the A_p , consisting of reddish-brown clay loam, is a red clay loam to two feet, just above the rotten rock. This soil has been seeded and supports fair pasture, which is too low in legumes because of inadequate lime and phosphorus.

We have some discussion here about mapping. Mr. Osmond of the English Soil Survey raises the question



K-1593. Near Bristol. Lithosolic Brown Forest soil -- Iulsgate series.



K-1594. North of Bristol. Gray-Brown Podzolic soil.

of whether or not one could separate these two soils. I point out to him that he must separate them accurately in making a good detailed soil survey. This would not be at all difficult with aerial photographs.

It rains. On a high ridge (about 800 ft.) I see a weakly developed Gray-Brown Podzolic soil with quite good grass. The A_1 is slightly mottled from a long period in turf. There is a leached A_2 and a B with the characteristic blocky structure of the Gray-Brown Podzolic. These blocks have the characteristic collodial coatings. The B_3 above the rotten limestone is quite red. In the B are some small concretions rich in manganese.

It rains hard. We go on to Chedder and have a good lunch. Afterward we drive south and southwest to about two miles from Draycott where we stop to look at a dark-gray poorly drained soil transitional between Half-Bog and Wiesenboden. These are called Highbridge.

- | | | |
|-------|---------|--|
| A_p | 0-2" | Dark grayish-brown granular clay loam with many grass roots. |
| A_3 | 2-10" | Very dark brown clay loam, mottled with black and dark reddish-brown; rounded blocky, and prismatic. |
| G_1 | 10-14" | Dark grayish-brown clay, similar to A_3 . |
| G-C | 14 plus | Medium gray massive clay with reddish-brown mottling. |

of whether or not one could separate these two soils. I point out to him that he must separate them accurately in making a good detailed soil survey. This would not be at all difficult with aerial photographs.

It rains. On a high ridge (about 800 ft.) I see a weakly developed Gray-Brown Podzolic soil with quite good grass. The A₁ is slightly mottled from a long period in turf. There is a leached A₂ and a B with the characteristic blocky structure of the Gray-Brown Podzolic. These blocks have the characteristic colloidal coatings. The B₃ above the rotten limestone is quite red. In the B are some small concretions rich in manganese.

It rains hard. We go on to Gredder and have a good lunch. Afterward we drive south and southwest to about two miles from Draycott where we stop to look at a dark-gray poorly drained soil transitional between Half-Bog and Wassenboden. These are called Highridge.

A _p	0-2"	Dark grayish-brown granular clay loam with many grass roots.
A ₂	2-10"	Very dark brown clay loam, mottled with black and dark reddish-brown; rounded blocky, and prismatic.
G ₁	10-14"	Dark grayish-brown clay, similar to A ₂ .
G-C 14		Medium gray massive clay with reddish-brown mottling.



K-1595. Near Draycott. View looking into hills over dark gray hydromorphic soil -- Highbridge series.



K-1596. Near Draycott. View looking into hills over dark gray hydromorphic soil -- Highbridge series.

Although this is a fairly good pasture the soil is high in lime and there is much manganese deficiency together with some iron deficiency.

I see a muck soil some 24" thick over a gray mottled gley. The upper soil contains mineral matter from burning and some wind-blown dust. This is a good example of our Carlisle and supports a good pasture.

We stop in the Godney Moor and see a Sedgemoor peat area where workmen are now cutting the peat for sale. Blocks of peat are cut with long sharp knives and forked out to rest on the ground. They shrink greatly upon drying. When partly dried they are piled in round cribs. The peat is sold locally for fuel. A workman tells me that "one mump makes three turves". This peat looks quite a bit like our Houghton.

We have tea in Glastonbury. On Walton Hill, we stop near a limestone quarry of the Middle Lias to see the Somerton soil. This is called locally "red-and-brown calcareous soils". It is a lithosolic Brown Forest. There is an upper 6" to 12" of brown clay loam which passes, through a narrow transition of limestone and clay, into cracked limestone. One sees a great deal of clay deep within the limestone, indicating a large amount of downward clay movement. This phenomenon needs

Although this is a fairly good pasture the soil is high in lime and there is much manganese deficiency together with some iron deficiency.

I see a much soil some 2 1/2" thick over a gray mottled clay. The upper soil contains mineral matter from burning and some wind-blown dust. This is a good example of our Carlisle and supports a good pasture.

We stop in the Godney Moor and see a Sedge-moor peat area where workers are now cutting the peat for sale. Blocks of peat are cut with long sharp knives and turned out to rest on the ground. They shrink greatly upon drying. When partly dried they are piled in round cribs. The peat is sold locally for fuel. A workman tells me that "one mow makes three turves". This peat looks quite a bit like our Houghton.

We have tea in Glastonbury. On Walton Hill, we stop near a limestone quarry of the Middle Lias to see the Somerset soil. This is called locally "red-and-brown calcareous soils". It is a lithoclastic brown forest. There is an upper 6" to 12" of brown clay loam which passes through a narrow transition of limestone and clay, into cracked limestone. One sees a great deal of clay deep within the limestone, indicating a large amount of downward clay movement. This phenomenon needs



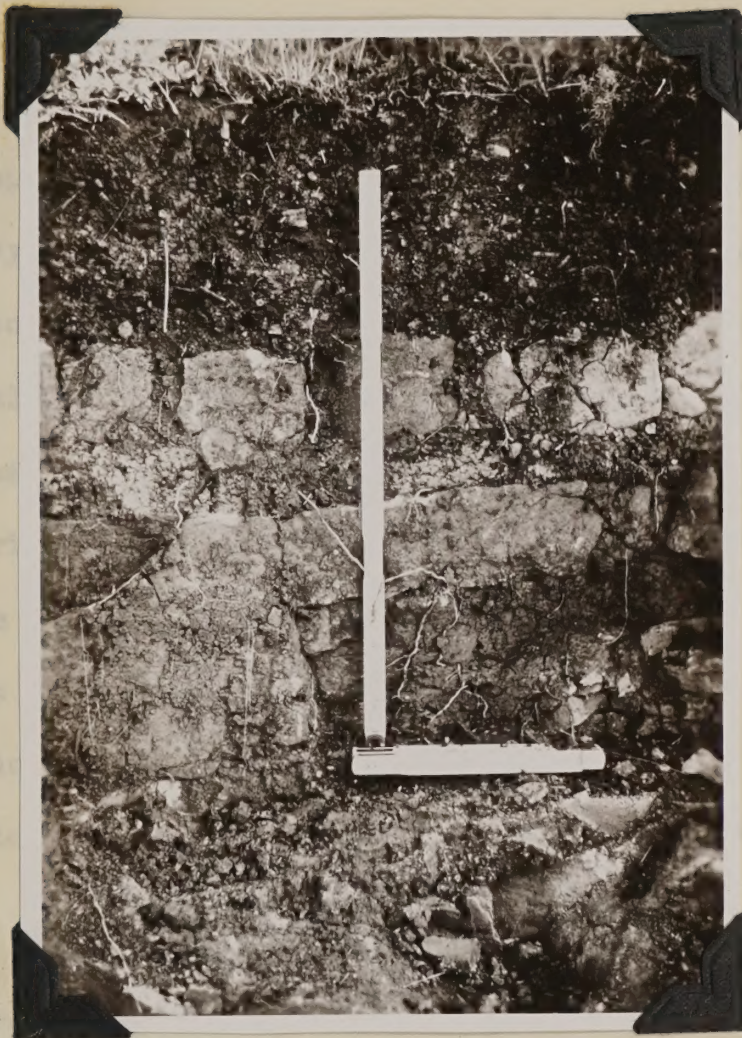
K-1597. Near Glastonbury. Sedgemore peat area. Peat cut to dry for sale as fuel.



K-1598. Near Glastonbury. Cutting peat.

K-1597. West Glastonbury. Hedgehog nest.
Exam. Nest out to dry for sale as fuel.

K-1598. West Glastonbury. Cutting nest.



K-1617. On Walton Hill near Glastonbury. Profile of Somerton soil. A lithosolic Brown Forest from limestone, locally called "Red brown calcareous soil."

a great deal more emphasis. Many of the thin soils on limestone are not thin because of surface erosion but because of this downward movement of the clay into the deep cracks and subterranean channels in the rock. This is especially important in Terra Rossa but also in the Gray-Brown Podzolic and Brown Forest regions.

We stop for a few moments near Othery to see a fairly shallow dark reddish-brown Brown Forest soil on a non-calcareous sandy marine deposit.

We drive on to Taunton through the Vale of Taunton. Here there is a red sandy soil from red sandstone. The surface is undulating to gently rolling. The soil is very productive for peas and other garden crops.

We stop at the Castle Hotel in Taunton at 7:00.

June 30

We are out in the car ready to go about 9:00. Near Leigh Hill (also near Wellington Somerset), I see a curious humus Podzol on very gently undulating upland.

Soil profile sample No. 5

- | | | |
|----------------|---------|---|
| A _p | 0-9" | Very dark grayish-brown to black granular silt loam (no A ₂ !) |
| B | 9-10" | Reddish-brown thin pan or ortstein |
| G-C | 10 plus | Soft yellowish-brown silty clay loam, streaked and mottled with brown. |

a great deal more emphasis. Many of the thin soils on limestone are not thin because of surface erosion but because of this downward movement of the clay into the deep cracks and subterranean channels in the rock. This is especially important in Terra Rossa but also in the Gray-Brown Podzolic and Brown Forest regions. We stop for a few moments near Othry to see a fairly shallow dark reddish-brown Brown Forest soil on a non-calcareous sandy marine deposit. We drive on to Tanton through the Vale of Tanton. Here there is a red sandy soil from red sandstone. The surface is undulating to gently rolling. The soil is very productive for grass and other garden crops. We stop at the Castle Hotel in Tanton at 7:00.

June 30

We are out in the car ready to go about 9:00. Near Leigh Hill (also near Wellington Somerset), I see a curious humus Podzol on very gently undulating upland.

Soil profile sample No. 5

A _p	0-2"	Very dark grayish-brown to black granular silt loam (no Agl)
B	2-10"	Reddish-brown thin pan or crustain
	0-3 10	plus soft yellowish-brown silty clay loam, streaked and mottled with brown.



K-1618. Near Othery. Brown Forest soil from non-calcareous sandy marine deposits.



K-1599. Near Wellington, Somerset.
Hay cocked on tripods - ("tripod pikes").



K-1600. Monument to Duke of Wellington. View of
valley.

The clay continues for about 5 to 8 feet where it is underlain with gravel.

Nearby, I see some Gray-Brown Podzolic soil from chert beds of upper Greensand. Possibly, the rock had a covering of "head" or glacial sludge.

Here in Somerset, I see many nice digitalis growing wild along the road. We drive on to the great monument to the Duke of Wellington, the Iron Duke. This is placed on poor soil -- the Pilsden series. Here Professor Wallace and I leave Muir, Osmond, and Pendleton and return to Taunton for lunch. After lunch, Professor Wallace and I drive back to the Long Ashton Station. After tea, Mrs. Wallace drives us to the train in Bristol. We leave for London about 5:25.

We reach Paddington Station about 8:00 and I go directly to the Athenaeum Court. I go to bed early very tired.

July 1

I get up late in a cold, wet London morning. I check my tickets at the United States Lines and call at the office of our Agricultural Attache, Mr. Paul Nyhus, in the American Embassy.

I have lunch with Miss Madeleine von Fellenberg, whom I met last summer in France. Despite the weather,

I take a few short walks around Westminster and along the Thames.

July 2

I am up early and pack for the return voyage. My train leaves Waterloo Station at 9:25 a.m. We reach Southampton about noon and I go almost immediately on board the S/S America. The boat sails about three or four o'clock in the afternoon.

July 3 to 7

I am at sea on the S/S America. For most of the trip the sea is moderate and the weather cool and rainy. For many, the sea is too heavy.

July 8

We nose into the dock at New York very slowly about 10:00 a.m. I am off the boat and away from the pier at 11:00. I go directly to the Liberty Street Station and get space on the Capital Limited for Washington. I leave New York at 1:00 p.m. and reach Washington at 4:15.

Home again at 5:00.

I take a few short walks around Westminster and along
the Thames.

July 2

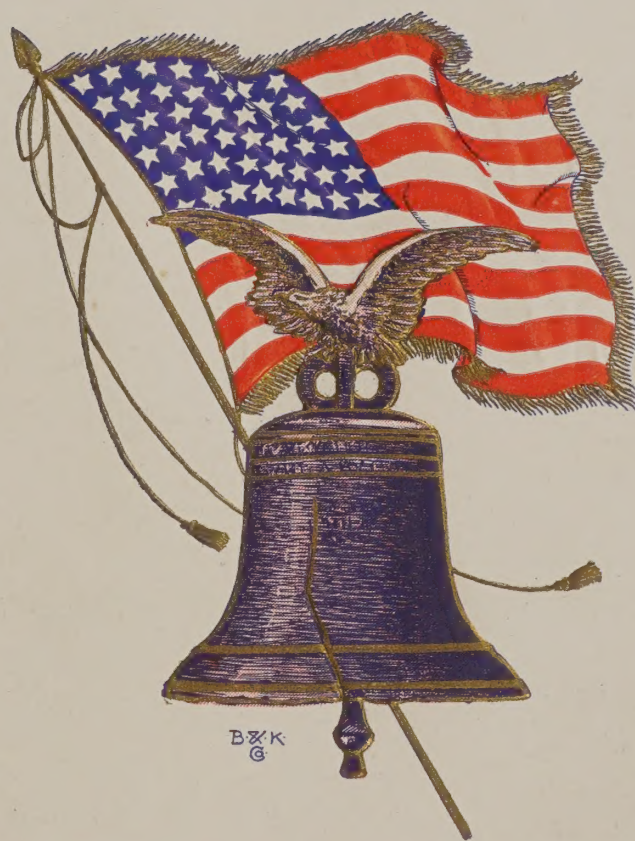
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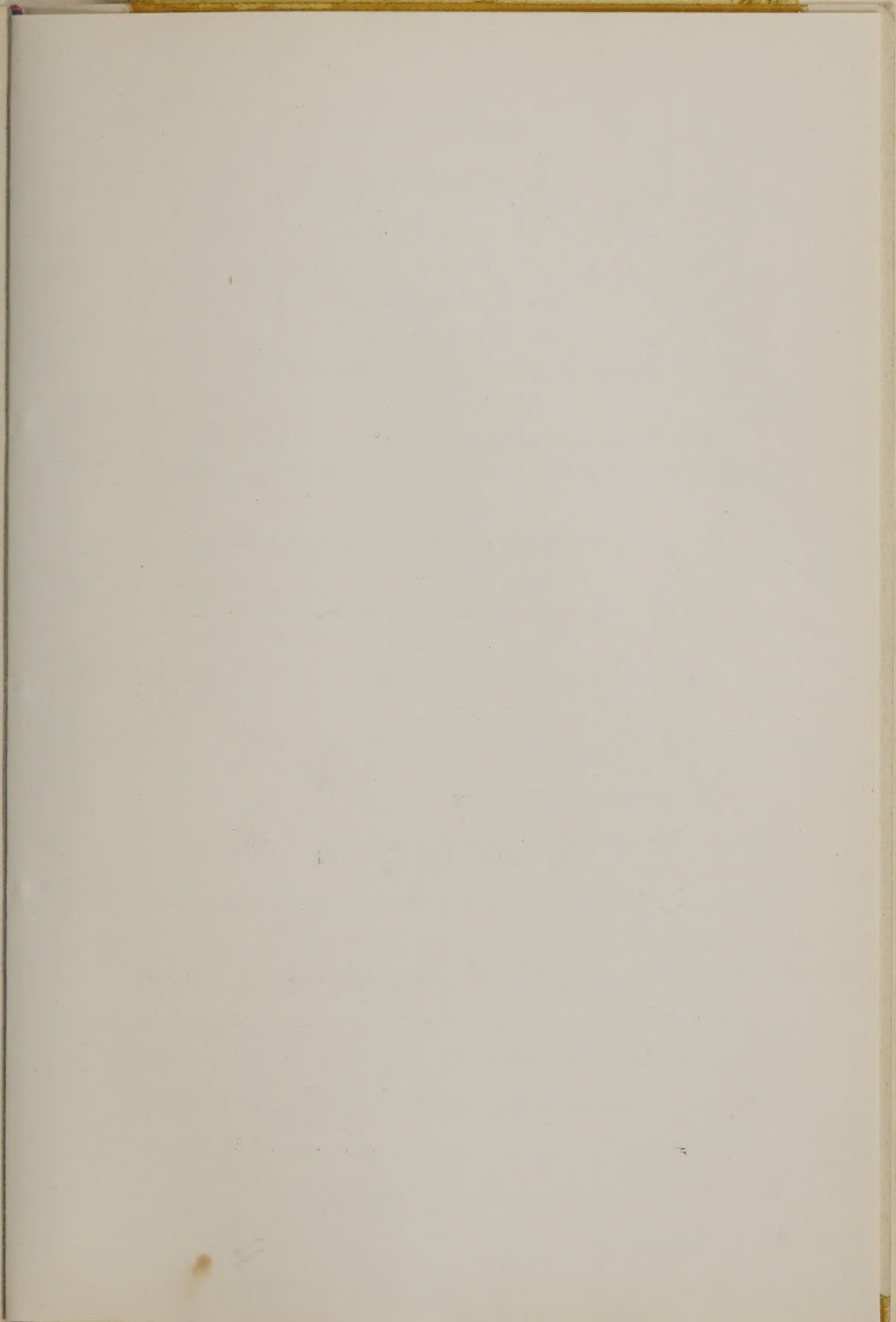
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TWIN SCREW, TURBINE STEAMER

"AMERICA"

Captain JOHN W. ANDERSON

CAPTAIN, U.S.N.R.

ABSTRACT OF LOG

VOYAGE 29, Westbound

FROM LE HAVRE TO NEW YORK VIA SOUTHAMPTON AND COBH

FRIDAY, JULY 2nd, 1948

Left Le Havre L.V. 0047 a.m., BST, July 2 Arrival Nab Tower 0408 a.m., BST, July 2
 Steaming Time Le Havre to Southampton: 3 Hours, 21 Minutes
 Total Distance: 77 Miles—Average Speed: 23.0 Knots

Left Nab Tower 1700 p.m., BST, July 2 Arrival Daunt L.V. 0737 a.m., BST, July 3
 Steaming Time Southampton to Cobh: 14 Hours, 37 Minutes
 Total Distance: 342 Miles—Average Speed: 23.4 Knots

DATE	LAT.N.	LONG.W.	NAUT. MILES	SPEED	WIND	REMARKS
July 3	51-21	9-39	58	23.2	WSW4	Departure Daunt L.V. 0930 a.m., BST
July 4	50-09	24-48	578	23.1	NNW4	Moderate Sea and Swell
July 5	47-08	38-37	578	23.1	Var. 4	Moderate Sea and Swell
July 6	42-56	50-43	582	23.3	Var. 3	Slight Sea and Swell
July 7	41-26	63-15	556	22.2	SW-6	Heavy Sea and Swell
July 8			488	23.3		Arrival Ambrose L.V. 0752 a.m. EDST

Distance Cobh to New York: 2840 Miles Steaming Time: 5 Days, 03 Hours, 22 Min
 Average Speed: 23.0 Knots

NOTE: A Nautical Mile or Knot is approximately 15 per cent longer than a Statute or Land Mile.

BEAUFORT WIND SCALE

Force	Wind's Description	Miles per Hour
0	CALM	Less than 1
1	LIGHT AIR	1-3
2	LIGHT BREEZE	4-7
3	GENTLE BREEZE	8-12
4	MODERATE BREEZE	13-18
5	FRESH BREEZE	19-24
6	STRONG BREEZE	25-31
7	MODERATE GALE	32-38
8	FRESH GALE	39-46
9	STRONG GALE	47-54
10	WHOLE GALE	55-63
11	STORM	64-75
12	HURRICANE	Above 75

The word "Radar" means RAdio Direction And Ranging. Its principle is the sending out of a radio beam, having it strike an object, and then being reflected back as an echo, the same as a tennis ball. This echo is presented on a screen, so arranged through electrical circuits that the bearing and distance can be determined. Radar, however, has definite limitations. It does not replace the human eye. Therefore, if the ship is delayed in fog it has met conditions that not even Radar can overcome.

N-6412
PTD. IN U.S.A.

Souvenir Log



United States Lines

